



STRATO OF LAMPSACUS

TEXT, TRANSLATION, AND DISCUSSION

RUTGERS UNIVERSITY STUDIES
IN CLASSICAL HUMANITIES

VOLUME XVI

EDITED BY

MARIE-LAURENCE DESCLOS
WILLIAM W. FORTENBAUGH

STRATO
OF
LAMPSACUS

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Professor Jørgen Mejer
Scholar, Colleague, Contributor to RUSCH
1942–2009
In Memoriam



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Preface

Le présent volume contient une nouvelle édition des fragments de Straton de Lampsaque et un ensemble d'articles, tous directement issus du Colloque international de Grenoble, les 5–7 avril 2005. La tenue de ce colloque, et les excellentes conditions dans lesquelles il s'est déroulé, n'auraient pas été possibles sans la participation active des étudiants de Master et de Doctorat à son organisation matérielle, et l'investissement du groupe de recherches Philosophie, Langages et Cognition. Je leur adresse mes plus vifs remerciements, ainsi qu'aux diverses institutions qui nous ont apporté leur soutien: l'Université Pierre Mendès France et la MSH-Alpes, évidemment, mais également le Ministère des Affaires Étrangères, le CNRS, le Conseil Général de l'Isère, la Communauté d'agglomération Grenoble-Alpes Métropole et, enfin, la Ville de Grenoble.

M-LD

The preceding words of appreciation are well directed. I second them and add that I and all the participants in the Grenoble conference are deeply indebted to Marie-Laurence for her leadership role in organizing the Grenoble conference. It was a very special occasion: fourteen scholarly papers over three days, periods of relaxation with old and new friends, comfortable housing and, of course, French cuisine.

The languages of the conference were English and French. Consequently the papers in this volume are divided between the two languages.

Marie-Laurence has served as editor of those in French and I have performed the same role for those in English. Others have lent assistance when called upon. I mention Robert Shaples of University College London, and Eleanor Jefferson, a graduate student at Rutgers University. I am especially grateful to Diane Smith who has formatted the volume while making corrections and on occasion typing Greek, Latin, and Hebrew. This is Diane's thirteenth consecutive volume. She began with volume 4 and will be leaving off with the present volume. Her skill and loyalty will be sorely missed. Finally, I mention Larry Mintz of Transaction Publishers, who in recent years has reviewed our work with a keen eye and caught not a few errors.

Some twenty-nine years ago, I conceived the idea of starting a new series called Rutgers University Studies in Classical Humanities (RUSCH). The Provost's office approved the idea, and Transaction Publishers agreed to produce the series. It was to serve as a vehicle for advancing the work of Project Theophrastus and at the same time to enhance the name of Rutgers among classical scholars. It has certainly achieved the former goal and perhaps done more than a little in regard to the latter. It is now time for me to give up the position of series editor. Twenty-nine years is long enough. Happily, my former graduate student, David Mirhady, now at Simon Fraser University, will take over as series editor. I am grateful and expect him to do more than fill my shoes. Not that I plan on disappearing straightway. Over the next few years, I intend to continue directing Project Theophrastus and to help David with editing, whenever he needs my assistance. But I am growing older and in time will join those senior citizens who are aptly characterized by Theophrastus as τυμβογέροντες.

I close on a sad note. Last September Jørgen Meier passed away. That was a significant loss to Project Theophrastus in which Jørgen exhibited a keen interest over many years, to the series RUSCH to which Jørgen was a contributor on four occasions, and to the larger world of classical philology in which Jørgen was greatly respected. This volume is dedicated to his memory.

WWF
December 2009

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Une introduction à Straton de Lampsaque

Marie-Laurence Desclos

Le présent ouvrage s'inscrit dans le cadre du Project Theophrastus, fondé en 1981 à l'initiative du Professeur William W. Fortenbaugh de l'Université Rutgers, dans le but de rééditer les fragments et opuscules de Théophraste d'Érèse, premier successeur d'Aristote à la tête du Lycée. Il s'agissait également de les accompagner d'un patient travail exégétique. Les premiers volumes des Rutgers University Studies in Classical Humanities (RUSCH) ont ainsi permis de mettre à la disposition du public savant les riches résultats de cette entreprise. Après 1993, les membres du *Project* ont décidé d'élargir l'investigation aux autres péripatéticiens, l'édition de Fritz Wehrli, *Die Schule des Aristoteles*, étant incomplète et réclamant une traduction qui la rende plus aisément, et plus largement, exploitable. C'est ainsi qu'en 1995, un colloque a été consacré à Démétrios de Phalère (vol. 9 des RUSCH) et à Dicéarque de Messine (vol. 10). Les années suivantes ont été vouées à l'édition, la traduction et la discussion des textes dans lesquels sont nommés Eudème de Rhodes (vol. 11), Lycon de Troade et Hiéronymos de Rhodes (vol. 12), Ariston de Céos (vol. 13), Héraclide du Pont (vol. 14 et 15). Ce volume est dédié à l'édition et à l'interprétation des fragments de Straton de Lampsaque. Il se situe donc dans la continuité d'une série de

manifestations scientifiques destinées à permettre une meilleure connaissance de l'école péripatéticienne, des infléchissements théoriques dont elle a été le théâtre, et de son influence sur les courants de pensée dont elle est contemporaine, ou qui lui sont postérieurs.

Or donc, Straton. Je partirai d'un constat, celui du peu d'intérêt que semble manifester les érudits pour le péripatéticien de Lampsaque quand ils ne le confondent pas purement et simplement avec son homonyme de Sardes, auteur d'épigrammes érotiques. Il convient donc de s'interroger sur les raisons de cette méconnaissance, l'état fragmentaire du corpus, même s'il constitue un élément non négligeable, n'expliquant pas tout. J'en avancerai deux, n'ayant nullement la prétention de l'exhaustivité. La première est liée, me semble-t-il, à la place qu'occupe Straton dans le chœur de ceux que j'appellerai, par commodité, les "savants" grecs; la seconde tient à l'état de la question, sans que l'on sache toujours très bien s'il est la cause, ou la conséquence, de la désaffection dont souffre Straton.

Dans un article déjà ancien, paru dans la revue *Belfagor*, Mario Vegetti entreprenait d'étudier "la production théorique grecque" à travers la figure du "scienziato," du "savant," en laquelle il voyait la "première manifestation," une manifestation "paradigmatique," de celle du théoricien. Une telle étude, nous dit-il, devra, pour prétendre à quelque efficace, adopter "les traits d'une description topologique," se faire, par conséquent, "géographie" intellectuelle. Par quoi nous devons comprendre la nécessaire prise en compte des "lieux" du savoir, qu'ils soient idéologiques, sociaux ou matériels. Premier de ces lieux: l'*agora*, occupée par des *demiourgoi*, dont les médecins de la seconde moitié du v^e siècle constituent le meilleur exemple, tout en s'inscrivant dans une tradition inaugurée par Thalès et Hécatee de Milet. Hommes de la méthode, ils conçoivent la science comme une "route," c'est-à-dire, selon le mot de Mario Vegetti, comme "un processus rationnel cumulatif et ouvert," où l'accroissement des connaissances est indissociable d'une articulation étroite de "la théorie et de l'expérience, de la raison et de la pratique, de la "tête" et des "mains." À cette tradition s'en oppose une autre, vivace pendant le vi^e et le v^e siècles, représentée par ceux que Mario Vegetti appelle "les hommes du temple": voilà notre deuxième "lieu." Pythagore, Parménide et Héraclite en sont les premiers porte-parole, en qui s'incarne la figure du "pur théoricien," adepte de la "vie contemplative" et d'une rationalité de type logico-mathématique seule à même de "déchiffrer" le "plan divin du monde." Commence aussi à se faire jour la volonté d'harmoniser les institutions légales et les principes d'organisation du *kosmos*, c'est-à-dire d'articuler étroitement le savoir et le pouvoir. Cette "parole" cependant, "oraculaire et prophétique," ne persuade

pas son auditoire, se contentant d'annoncer, ou d'énoncer, la vérité. Entre le pur théoricien et l'empirique, entre le temple et l'*agora*, devra donc se glisser un troisième homme, capable de faire résonner le discours vrai dans la Cité: le dialecticien, et un troisième lieu, d'où il pourra le faire: cette école, que lui est l'Académie. École, également, le Lycée, que pourtant tout sépare de l'autre, la platonicienne. Non pas tant pour son mode, interne, de fonctionnement et pour les recherches qu'on y mène, qu'en raison du pouvoir politique, celui du Macédonien, qu'elle trouve en face d'elle. L'autonomie, relative, et le remarquable développement de ce que nous appellerions aujourd'hui les différentes sciences régionales vis-à-vis de la philosophie première, laquelle, dans le même temps, voit disparaître ses ambitions régaliennes: voilà qui signe ce que Mario Vegetti appelle "l'expulsion" du savant, du *scienziato*, hors des lieux du pouvoir. Ce dernier, en effet, n'a plus pour tâche, comme le voulait Platon, de former l'homme politique ou de se substituer à lui: seulement de le désillusionner. Encore préserve-t-il son indépendance. Il n'en sera plus vraiment de même au début du III^e siècle, lorsque Straton, et d'autres, rejoignent le Musée d'Alexandrie fondé par Ptolémée Sôter. Nous sommes maintenant en présence de professionnels du savoir, d'enseignants salariés, assurés d'un travail tranquille tout entier consacré à l'accumulation des connaissances. Certes, tel est le rêve secret de tout universitaire, pour autant il n'y a rien là qui soit susceptible d'exciter les imaginations, et de susciter ces publications que mériterait cependant l'originalité de sa physique et de sa psychologie.

Il est, en effet, fort peu de monographies qui aient explicitement, et exclusivement, Straton de Lampsaque pour objet. Citons, outre les recueils de fragments, l'ouvrage de Gatzemeier, paru en 1970, consacré au problème du mouvement, et celui, plus récent (1996), de S. Berryman, sur la philosophie stratonienne de la nature et la question de la téléologie; celui de L. Repici (1988), sur sa psycho-physiologie; sans oublier l'ancienne thèse de G. Rodier (elle date de 1890), sur sa physique. Les articles sont, certes, plus nombreux, mais sont bien loin de connaître l'inflation que l'on constate pour d'autres auteurs, d'autres écoles ou d'autres périodes. Sans me prononcer sur leur contenu, j'observe néanmoins que, bien souvent, la pensée de Straton est moins étudiée pour elle-même que pour ses trahisons et ses fidélités prétendues à l'égard d'un prédécesseur pour toujours figé dans la posture du *magister*. À quoi bon, dès lors, étudier le disciple indocile, ou l'épigone déviant, aux textes fragmentaires et d'accès peu aisé, alors qu'Aristote et son œuvre, dont on sait les stimulantes difficultés, s'offrent à notre sagacité ? Deuxième remarque, inspirée sans doute par ma longue fréquentation de ces prosateurs grecs, que nous nommons des historiens,

et des commentaires dont les accablent ceux qui, aujourd'hui, se disent leurs collègues. Un Hérodote, un Thucydide, un Xénophon, un Polybe ne valent que parce qu'ils préfigureraient, et en tant qu'ils préfigureraient, avec un inégal succès d'ailleurs, l'histoire telle qu'on l'écrit à partir du XIX^e siècle. Or, à lire certains articles, on a l'impression qu'il en va de même pour un Straton, écrasé par l'imposante stature intellectuelle d'Aristote, mais qui regagnerait, par sa capacité à anticiper les démarches et les résultats de la physique moderne, ce qu'il perdrait dans sa comparaison avec le Stagirite. La physique, en ses enfances, rachetant, en quelque sorte, la philosophie en son déclin. Ou Straton entre juvénilité et sénescence. Là encore, on comprend que d'aucuns aient préféré la maturité triomphante d'un Platon ou d'un Aristote, des membres la *Stoa* ou de ceux du Jardin. Constat qui suscite une dernière question, en forme de construction annulaire: celle du *lieu*, improbable, occupé par Straton, entre aristotélisme orthodoxe et philosophie hellénistique, dont il fait indéniablement partie, mais dans laquelle on oublie trop souvent de l'inscrire.

Il nous faut donc rendre à Straton la place qu'il mérite, et mettre en évidence l'importance théorique qui a été la sienne aussi bien pour ses contemporains que pour ceux qui, après lui, au Lycée ou ailleurs, ont subi son influence.

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2

Strato of Lampsacus

The Sources, Texts and Translations

Robert W. Sharples

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Introduction: On Editing the Sources for Strato¹

1. General principles followed in this collection

This collection of the sources for Strato of Lampsacus follows the same basic principles as those of the sources for Theophrastus in FHS&G² and for other early Peripatetics in previous volumes of RUSCH. (I follow these collections in using the term “sources” because in dealing with prose authors it is not always easy to draw a hard-and-fast line between “fragments,” in the sense of quotations, on the one hand and testimonia on the other.) In particular, the present collection is essentially confined, as far as texts printed in full are concerned, to passages where Strato is mentioned by name — a principle which is probably more important in the case of Strato than of any other Peripatetic (see below, Introduction §2).³ Related texts are grouped together under a single number (e.g. **5A** and **5B**); texts that name Strato but are parallel to those printed in full are listed in the upper apparatus, as are texts that do not name him but are otherwise comparable. The present collection also follows FHS&G and the previous collections in RUSCH in arranging the material by subject-matter, with separate lists of the titles attested for Strato cross-referring to the individual texts, rather than seeking to arrange the items primarily by their putative relation to the attested titles, a procedure which is obviously appropriate in the context of reconstructing lost dramatic works, for example, but less obviously so in that of philosophical doctrines.⁴ In the case of Strato very few of the reports in the fragments actually cite a book-title; I have considered whether to indicate after each title, even if only tentatively, the fragments that might possibly relate to it even if there is no actual evidence that

¹ This is a version of the paper given at the conference at Grenoble in April 2005 and to seminars in London in October 2005 and in February 2006, revised in the light of the discussion on these occasions and of subsequent work on the texts.

² For abbreviations see below, p. 18.

³ Mansfeld 1998, 20 n.22, while expressing approval for the principle in FHS&G of including only reports that name Theophrastus, has said that references should have been included to more passages in the doxographical tradition, even where these were not printed in full, on the grounds that the title of FHS&G did after all refer to sources for ‘Theophrastus’ influence. While this is true, the need may partly be filled in the case of FHS&G by reference to the accompanying commentary volumes, in the present case by reference to the studies contained in the present volume.

⁴ Though this is not to deny that the original context in Strato’s work of arguments reported by a later source may not be crucial for questions of interpretation; for an example see below, n.6.

they do so; however, this is usually so uncertain that I would be reluctant to do so except perhaps in a very few cases, and it therefore seems more consistent not to do so at all.

There are relatively few titles attributed to Strato whose classification is unclear. It may just be chance that we have no reports of Strato's view on winds;⁵ but given Strato's psychological theories it would I think be perverse to classify *Peri pneumatos* as a meteorological rather than a psychological or physiological work. On the other hand, there are some boundaries which it is hard to draw. I have therefore divided the titles up into separate lists only as far as follows: Logic and Topics; Physics and Theology; Psychology, Physiology and Zoology; Ethics, Politics and Discoveries; and Miscellaneous. The boundary between psychology and physiology is hard to draw, and, while we have titles that indicate discussion of creatures other than human beings, the only actual reports that seem to link with any zoological title are on reproduction, where Strato, like Aristotle, seems to have treated humans and other animals in the same work.

Whatever the content of the work *On Gods* may have been, the reports that we have relate to the place, or lack of it, of divine agency in Strato's physical theory. For that very reason, while in general I have tried to arrange texts and titles in the same order as each other, I think it appropriate to follow Wehrli in putting the "theological" passages at the start of the physics section, but the title *On Gods* at the end of the relevant list. In the light of Professor Repici's paper in the present volume there is I think a strong case for treating Strato's criticisms of the arguments for immortality in Plato's *Phaedo* as a separate section, rather than as part of the psychology section, to avoid readers taking them as necessarily evidence for Strato's own views when they may rather be dialectical arguments.⁶ On the other hand, the criticisms of the *Phaedo* have been placed in a separate section following Psychology/Physiology (p. 166), rather than being included under Logic/Topics; the Logic/Topics section should be concerned with theoretical issues or with general statements about Strato's practice, not with specific examples of dialectical argumentation.

⁵ Wehrli included one text on winds where Strato is not named (his fr.88); see further below. Cf. also fr.6 Gottschalk.

⁶ Wehrli detached 79 here (his fr.118) from the other criticisms, which has actually led to its being treated as evidence for Strato's own view; at any rate Caston 1997, 339 and n.71 says that "the harmonia theory is attributed to no less than four of [Aristotle's] colleagues and students, and . . . Strato even defends it against a category-mistake objection," citing this passage. This at any rate suggests that he supposes that Strato actually endorsed the harmonia theory.

Wehrli put *On the Principles, Three or Two?* and *On Causes* under both Logic and Physics, in the case of the first title with a question-mark in both places but in that of the second without. I incline to think that both titles belong under physics. Wehrli put *On the Nature of Man* under both physiology and ethics; I think it belongs in the combined psychology and physiology section. After all, Aristotle's *De anima* and Nemesius' *On the Nature of Man* — to take just two examples — both include discussion of choice and action, but that does not lead us to regard them as belonging to ethics. *On the Future* is listed by Wehrli under Ethics, but I suspect it may relate rather to logic. Both in ordering titles and in ordering the fragments, I have kept close — closer than Wehrli — to the “Bekker order” of Aristotle's writings. This may conceivably introduce distorted perspectives, but to arrange the evidence relating to Strato differently could be even more tendentious — if for example we were to put physiology before psychology in the supposition that Strato reduced the latter to the former.

It has been suggested that it is artificial to separate **10** (16 Wehrli) and **14** (19 Wehrli), both on Strato's practice of argument, in the way that Wehrli did, placing the former under biography but the latter under logic. The former, however, relates to the general character of Strato's writings, while the latter makes a specific point about the importance Strato attached to dialectic.⁷ For the placing of **60** under psychology, with Wehrli, rather than under logic see Professor Modrak's paper in the present volume.

Unlike Wehrli, I have treated the lists of titles separately from Diogenes Laertius' life of Strato. It is one thing to present the list of titles as Diogenes gives it, in such a way that readers can draw inferences from its arrangement; another to catalogue titles ourselves and list the other evidence for them. There are in any case titles which are not in Diogenes' list, such as *On Being*, reported by Proclus (**24**) and *On Motion*, or *On Change*, reported by Simplicius (**40** and **41**).⁸

In general my approach to including context material has been to quote more rather than less. A notable case is **54**, Strabo's report and criticism of Eratosthenes' appeal to Strato for the claim that geological changes

⁷ Strato is indeed mentioned here in a general list along with other Peripatetics and Academics; but it is the content of the report that is relevant to where it is placed in our collection, not the degree of precision it displays.

⁸ Wehrli lists *On Motion* and *On Time* as titles at the head of his “Motion and Time” section and follows them with a reference to Diogenes Laertius 5.59, with no indication that only *On Time* is included in Diogenes' list. — I do not see any simple solution to the question whether to translate *kinesis* in the fragments of Strato by “motion” or by “change”; some contexts require one, some the other.

can connect seas that were previously separate, and even lead to the entire draining out of some. Here the previous standard collection, in Wehrli 1967–1978 vol. 5, was decidedly selective; both Jones 1917 and Aujac 1979 regard as a report of Strato more than was included by Wehrli. The statement about Egypt at **54.49** is shown by the grammatical construction still to be a report of someone's views; and there is nothing to indicate that it is now Eratosthenes that Strabo is reporting, rather than Strato. The reference of "this" at **54.95** needs to be explained either in a note or by including the remarks of Strabo that precede it; the latter is simpler, presents the original evidence rather than just an interpretation of it, and facilitates discussion. To be sure, there is a danger that such context material may be taken as evidence either for Strato's own opinions or for his terminology; this danger is always present when collections of texts are consulted in a cursory way because they are ancillary to some other enquiry, or when points about terminology are made on the basis of the consultation of indexes or of electronic word-searches.⁹ But that is hardly a sufficient ground for excluding context material altogether.

Wehrli divided Diogenes' life of Strato into five separate items, one of which is the list of titles: following Berryman 1996, I have reunited them into a single one and included the material that Wehrli omitted — the list of other Stratos in section 61, which is directly relevant to the question of the attribution of some of our reports. Similarly I have, again following Berryman 1996, combined into a single item (**31**) Simplicius' discussion of Strato's views on time, divided by Wehrli into five separate fragments,¹⁰ and included the additional context material from Simplicius, as urged in Professor Jaulin's paper.

There is a particular issue concerning how to cite Aëtius, the doxographer whose lost work was reconstructed in parallel columns by Diels in *DG* from the pseudo-Plutarch *Placita* and from Stobaeus. Very often a report of Strato appears only in one of these two sources; where that is the case I give the text as from that author, noting the putative Aëtius reference in the apparatus, but where the same text does appear in both sources I give Aëtius as the heading. The procedure followed in the first type of case should not be taken to indicate disbelief in the general principles of Diels' reconstruction, rather a desire to give the actual, rather than putative

⁹ To cite one well-known example, the terms cited under the names of particular Presocratics in the index to *DK* are evidence for the terminology the Presocratics themselves used when they relate to B-texts (fragments proper) but not necessarily when they relate to A-texts (testimonia).

¹⁰ 75–77, 80 and 81 Wehrli.

source of a report as it has come to us.¹¹ For a similar reason, while editors' names are normally placed after the page reference to their edition, Diels' name appears after the book, chapter and section numbers of Aëtius as printed by him, to show that the structure of the work is essentially the result of his conjectural reconstruction.

Fr.44 Wehrli is from the pseudo-Clementine *Recognitions*, a Christian romance written to give Christian readers an alternative to pagan novels, but including edifying material, including a list of the material principles of various philosophers, among them Strato. Wehrli prints this fragment from Rufinus' Latin version. The edition of Rufinus' version in the series *Die griechischen christlichen Schriftsteller* prints the Greek of a scholion on one of St. Basil's homilies as evidence for the lost original Greek version.¹² Berryman 1996, 87–88 gives only the Greek and not the Latin. The simplest way to give all the available information has been to print both the Greek and the Latin as two parallel texts, **45C** and **45D**.

The texts printed here are not based on new collations of the MSS of the authors who refer to Strato; they are rather based, along with the information on MSS readings, on the best published editions of those authors. The exception is the reports from Diogenes Laertius (**1** and **4**), which Tiziano Dorandi has very kindly allowed to be based on his forthcoming edition of that author. In editing the fragments I have reported editorial conjectures reported by Wehrli that are not recorded in the standard edition I have followed, often more recent than the one he used, but I have not recorded readings of MSS that he gives but a later standard edition does not. For in such cases the edition will have decided as a matter of deliberate editorial policy not to report these MSS even though the earlier edition used by Wehrli does so. Moreover, confusion would arise from using more than one set of sigla.

2. The relation of the present collection to its predecessors

The first edition of the evidence for Strato by Fritz Wehrli (1944–59, vol. 5) included 154 items (including a and b fragments). That number was however inflated, in two ways. First, and less important, Wehrli assigned item or “fragment” numbers to some, though not all, of those book titles attested for Strato to which no further texts could be linked. (Where there were such texts, these bore numbers but the titles themselves did not.)

¹¹ Cf. further n.1 to 33.

¹² The passage is also printed in the Latin version, and discussed, by Diels in the preface to *DG*, 250–51.

Thirty-three of Wehrli's numbered items are book titles.¹³ Wehrli also assigned item numbers to four cross-references where a passage was relevant to more than one aspect of Strato's work.¹⁴ Second, and more important, Wehrli included a number of texts that do not name Strato, all taken from Hero's *Pneumatica*,¹⁵ on the strength of the close parallel between *one* of these passages (65b = **30B** here) and a report by Simplicius (**30A**) which *does* name Strato. In his first edition Wehrli adopted the convention of printing all these passages except **30B** itself in the same font and size but with narrower spacing of the letters. Such devices, when editors use them, are often overlooked. But in Wehrli's *second* edition the distinction was in any case dropped, and all the passages were printed in a similar typeface. In the present collection **30B** is the *only* Hero text that has been included.¹⁶ Significantly, it does not seem that any of the other passages from Hero included by Wehrli are appropriate for inclusion even as unnamed *apparatus* parallels to named texts,¹⁷ which implies that, if the material in Wehrli's unnamed Hero passages did in fact come from Strato, no other author recorded it as doing so. This may make us hesitate over whether these passages do in fact reflect Strato's views — the more so because Sylvia Berryman, in her paper in the present volume, demonstrates that the preface to Hero's treatise contains a number of different physical theories which are actually incompatible with one another, and so cannot all be Strato's.

Nine of Wehrli's texts naming Strato, being essentially parallels to other texts, are here reduced to the status of apparatus items.¹⁸ Fr.146 Wehrli, from a scholion to Euripides, *Hippolytus*, is a parallel, not itself naming Strato, to fr.147 Wehrli (**86**); a further parallel, from a scholion on Pindar, *Pythian* 2.63, is mentioned by Wehrli only in his commentary.¹⁹ Fr.28 Wehrli is from Brandis's collection of Aristotelian "scholia," and is in fact the *same text* as fr.29 Wehrli (**15** here) from Simplicius' *Categories* commentary.²⁰

¹³ Wehrli 20–26, 31, 68–69, 92–93, 100–6, 132–33, 135–43, 148–50.

¹⁴ Wehrli 46 = 87, 47 = 89, 107 = 74, 117 = 48.

¹⁵ Wehrli 56, 57, 64, 65b, 66, 67, 88.

¹⁶ A full list has however been given of passages included by Wehrli or Gottschalk that are not included in the present collection (below, 214).

¹⁷ The amount of context I have given in **30B** does however have the consequence that not only Wehrli's fr.65b, the passage corresponding to Simplicius, is included, but also his fr.66.

¹⁸ Wehrli 2, 29, 40, 79b, 79c, 119a, 121, 125, 131.

¹⁹ Cf. Berryman 1996, 17.

²⁰ Cf. Berryman 1996, 17 and 66 n.45.

In 1965 the late Hans Gottschalk published a collection which was in part a revision of, and in part a supplement to, the texts collected by Wehrli in his first edition. The revision, Gottschalk rightly argued, was needed because of inadequacies in Wehrli's edition, especially in Damascius' reports of Strato's criticisms of Plato's arguments for the immortality of the soul in the *Phaedo* (76–81 in the present collection). The supplement, Gottschalk claimed, was needed because there were a number of texts which did not mention Strato by name but which were, in Gottschalk's view, evidence for his physical theories; Gottschalk argued forcefully in support of Wehrli's attribution to Strato of the material from Hero's preface, and then connected with Strato other passages where he detected the same physical theory. In fact Gottschalk's argument in support of the attribution of the reconstructed theory to Strato is an argument from silence; it rests on the claim that there is no other suitable candidate at the right date to have originated it.

Gottschalk added twelve new texts to Wehrli's collection, one from Philo of Byzantium (Gottschalk 2), two from Themistius (3a and 3b), one from Simplicius (4), one from Ibn Bahlul's version of Theophrastus' *Metaphysics* (5 = 13.7–17 of the longer Arabic version by Ibn al-Khammar at Daiber 1992, 268), one from Cicero (11) and six from the pseudo-Aristotle *Problems*. Gottschalk argued (1965, 159–60) that Ibn Bahlul's text was a compendium from various sources and that the material in question came from Strato not Theophrastus; but, apart from the fact that the same material is also present in the longer Arabic version, Gottschalk was wrong to argue that the principle of *horror vacui* was not used by Theophrastus: see Daiber 1992, 279 and 283. Of Gottschalk's supplementary texts not naming Strato only one, Cicero, *Tusc. Disp.* 1.46, seems to me to merit inclusion as a parallel, to 61.²¹

Wehrli's second edition improved on his first by adding five new fragments: one from Plutarch (4.1 = 2 here), three from Damascius (41.1, 41.2, 82.1 = 25AB and 37) and one from Tertullian (131.1 = 69).²² Another collection was made by Sylvia Berryman in her Ph.D. thesis (Berryman 1996), which she has very kindly let me use for the present one. Of the new texts that she adds, four, from [Galen], *History of Philosophy*, are in the

²¹ An apparatus of parallels should in my view err on the side of exclusiveness; too often in the history of scholarship vague similarities between passages have been seized on as evidence of influence or of a specific common source where they are nothing of the sort. The place for mentioning such passages is rather in a commentary, in the present case in the other studies in this volume.

²² Respectively 4.1; 41.1, 41.2 and 82.1; and 131.1.

present collection treated as apparatus parallels to texts already in Wehrli.²³ One from Stobaeus is a paraphrase of a passage from Plutarch which Wehrli included in his second edition (fr.4.1W = **2** here). This leaves as new primary texts one passage from Simplicius on time (**34** in the present collection), one from Galen himself, a passing reference to the physician Athenaeus referring to the views of Strato — identified by Galen as “the physicist” — on shivering (**75**), and one from pseudo-Galen, a passage on the causes of disease where Strato’s name may only appear as the result of a textual corruption (**Appendix 7**). **34** had been omitted by Wehrli because the standard edition of Simplicius prints the name of Plato in the main text, though several MSS have that of Strato, and comparison with Stobaeus in **33** suggests that this is correct. What **34** adds to other reports of Strato’s views on time may have more to do with Simplicius’ interpretation than with Strato’s own views; none the less, it is a report of Strato by name and clearly needs to be included.

There are no further references to Strato in the Latin texts on the Packard Humanities Institute CD-ROM, the website www.thelatinlibrary.com,²⁴ or the website www.newadvent.org (which includes patristic and medieval Latin material). There is no entry for Strato (unlike Theophrastus) in the index to the *Encyclopedia of Islam*, and he is not mentioned in the philosophical section of an-Nadīm’s *Fihrist*. A search of the on-line Thesaurus Linguae Graecae has produced three new items not in Wehrli, Gottschalk or Berryman, but they are hardly very significant. Eusebius, *Praep. Ev.* 15.61.2 is a parallel to **57**, listed in the apparatus there. Photius, *Bibl.* 167 114b19, from Photius’ summary of Stobaeus (**12**), simply lists Strato as among those whose sayings Stobaeus recorded. Tzetzes, *Chiliades* 8.212.599 is a versification of Strabo’s report of Eratosthenes’ report of Strato in **54**; it is listed in the apparatus to 20–28 there, for, while it adds extra information,

²³ In the present collection they appear as apparatus items to texts **70**, **51**, **63A** and **74**.

²⁴ Except for one by Patrizzi, *Panaugiae Liber secundus De diaphano*, fol.4r, which is too late (1588) for us to include. Patrizzi attributes to Strato the view that air, water and earth, being simple bodies, are all by nature white: “Quid ergo, sive sit in aere lumen, sive sit in lumine aer, dicendumne erit, aerem videri? Per se quidem cerni non videtur, quoniam dum sine lumine est, non videtur. Si videtur illuminatus, non per se, sed videbitur per lumen. Si visibilis per se esset, cerneretur, sicuti lux, etiam in obscuro. An vero aer, sicuti color est qui in tenebris non cernitur, cernitur in lumine? Et eo devolvitur questio haec, ut iuxta Stratonis physici sententiam dicatur, aerem, et aquam, et terram natura esse alba, quia simplicia sint corpora? et ut colorata sunt cernantur, quamvis non nisi illuminata?” The source, as Paul Keyser has pointed out to me, is the first sentence of [Aristotle] *De coloribus* (1, 791a1–6); it appears that it was Patrizzi himself who originated the attribution of this work to Strato, in his *Discussiones peripateticae*, Basel 1581, 74 (Schmitt 1971, 316).

it does so erroneously. For Tzetzes adds, to the references to the Bosphorus and the Straits of Gibraltar which are given by Strabo, a further reference to the Straits of Messina which is in fact irrelevant to the point being made; the Tyrrhenian Sea, unlike the Black Sea or the Medierannean as a whole, can hardly have been regarded as being a closed lake before the creation of the straits leading into it. The creation of the Straits of Messina converted Sicily from a peninsula to an island, rather than joining two seas which had previously been *totally* separated.²⁵

3. Strato the doctor, and other doctors named Strato

Ancient medical sources refer, in highly technical contexts, to a Strato who was a doctor and a pupil of Erasistratus.²⁶ The question arises whether this person is to be identified with Strato of Lampsacus. Diogenes Laertius lists them separately in his list of individuals with the name of Strato (1.67–68); Tertullian in **58** also appears to distinguish between them, though Diels emended away the distinction. Berryman 1996, 98–105 discusses the issue and concludes (103) that the fragments explicitly assigned to the pupil of Erasistratus are so technical that, even if this person was in fact identical with Strato of Lampsacus, it is of little import whether these texts are taken into account in an assessment of the latter's thought. Nevertheless, our collection aims to be complete where Strato of Lampsacus is concerned; and in addition to the medical texts explicitly mentioning the pupil of Erasistratus, there are others that simply refer to "Strato."²⁷ Some at least of these, concerning treatments for epilepsy (**Appendix 13**) apparently derive from Strato of Beirut, in the first century AD; others, concerning poisons, may be from Strato the pupil of Erasistratus,²⁸ whether or not he was identical with Strato the natural philosopher.

²⁵ Tzetzes may have been influenced by a later passage of Strabo making a different point: at 1.3.10 Strabo suggests that Sicily may not have been separated from Italy by the sea breaking through the Straits of Messina, but rather raised from the sea-bed by an eruption of Etna.

²⁶ **Appendix 2–6.** Diogenes Laertius in 1 reports that "some say" that this Strato was Erasistratus' foster-child, **Appendix 4A** that "he was said" to have been Erasistratus' slave; both suggestions rejected by Wellmann 1892, 675.

²⁷ **Appendix 8–13.** In the case of [Galen], *Hist. Phil.* 132 (Appendix 7) Diels suggested that the reference to Strato, not present in any of the parallel reports of Diocles, was the result of a corruption of Ἐρασίστρατις τοῦ ἀέρις. Στράτων. See Runia 1999, 248. There was also a doctor Strato earlier than Aristotle: 1.71.

²⁸ Kind (1931) 316–17, against Wellmann; see the notes to **Appendix 9**. Kind (loc. cit.) does not say anything about the possible origin of our **Appendix 8**. Aëtius Amidenus (to be distinguished from the doxographer Aëtius mentioned above) does not there explic-

There are chronological difficulties in the identification. Strato the naturalist became head of the Lyceum in 288/7 or 287/6 BC.²⁹ He was in Alexandria for a period before that and was tutor to the future Ptolemy II Philadelphus, who was born in 308. The date of Erasistratus' birth is uncertain; most scholars favour a date between 310 and 300.³⁰ It is unlikely that Strato the naturalist, if he is identical with Strato the Erasistratean, studied with Erasistratus — presumably travelling to Alexandria to do so? — *after* he had already become head of the Lyceum.³¹ Moreover, it seems likely that he already had links with the Lyceum *before* he became Ptolemy's tutor.³² In that case, either he studied medicine with Erasistratus, if he did, while also tutoring Ptolemy, which means that this phase of his interest in medicine

itly indicate where his use of the Strato in question ends. The fact that parallels with Galen restart with ch. 2.4 suggests that the whole of 2.3 comes from Strato, no other source being mentioned; on the other hand, references to *Roman* measures at the end of the section suggest either that the source is much later or that material taken from an earlier source has had additions made to it at the end. Following the principles of FHS&G, the whole chapter has been included, to facilitate discussion of the issue.

²⁹ As Sollenberger (1992) 3843 points out, Diogenes in **1** says that Strato became head of the school in the 123rd Olympiad (288/7–285/4 BC) and was head for 18 years; in **6** he implies that Lyco succeeded Strato as head of the school in the 127th Olympiad (274/3–271/0 BC. Diogenes in **6** only actually *says* that this was the date of Strato's will, but the expression may be careless.) Even if Strato died at the very end of 271/0, he could only have been head for eighteen years (counting inclusively; seventeen years, by our reckoning) if he had succeeded in 288/7, or, if we allow that the figure may be approximate and Strato's term of office may have fallen a few days short of the stated figure, 287/6.

³⁰ Wellmann 1907, 333; Jaeger 1960, 233. Kotrc 1970, 238 n.5 says 305. Cf. Berryman 1996, 101 and n.26. Susemihl 1891, 800 argued for 325 at the latest (cf. Berryman 1996, 100–1 and n.25), but his argument turns on the story, rejected by Wellmann loc. cit., that he was court physician to Seleucus in c. 294 BC (Plutarch, Demetrius 38, and many other sources, listed by Wellmann). Erasistratus was the pupil of Metrodorus, whose birth Susemihl 1891, 782 n.30 places not later than 370; this might suggest a date before 320 for Erasistratus' birth (cf. Berryman, loc. cit.), but Susemihl's dating from Metrodorus rests on the assumption that he was no more than forty years junior to his teacher, Chrysippus of Cnidus (for whom see **Appendix 4**).

³¹ Berryman 1996, 103 (cf. 101) argues that it is more likely, if Strato the naturalist studied medicine in detail, that he did so before becoming head of the Lyceum.

³² Berryman 1996, 96, citing Zeller (1879, 901 n.2) and Wehrli (1967–78, vol. 5 47–48) for the suggestion that Strato went to Alexandria on a recommendation by Demetrius of Phalerum. It is in principle possible that Strato became sufficiently prominent in the Lyceum after he arrived from Alexandria to be elected its head even if he had not been a member of the school earlier; but this seems unlikely — the more so the earlier we date Theophrastus' death — and also raises the question whether an earlier career primarily in medicine would have been a basis for his becoming Ptolemy's tutor. See also Michael Sollenberger's paper in the present volume.

did not precede his activity in the Lyceum, or else he had studied with Erasistratus before he went to the Lyceum for the *first* time — which is difficult even on Sussemihl's early dating for Erasistratus. We cannot altogether rule out the identification of Strato the naturalist and Strato the Erasistratean on chronological grounds, but the weight of the arguments seems to be against it. Moreover, the reports of the views and writings of Strato the Erasistratean are concerned with therapeutic rather than with theoretical issues; so the question arises, if Strato the naturalist was indeed the author of this material, whether he produced it while studying with Erasistratus, or subsequently, combining the roles of a philosopher and a practising doctor.

In FHS&G a number of texts whose connection with Theophrastus was questionable were included in an appendix. In selecting them we were guided to a large extent by a pragmatic consideration: namely the desire to make easily accessible texts which it would be hard to find except in major research libraries. Of our nine appendix items six were from papyri, and the other three were texts from manuscripts only previously published in an appendix to a monograph or in journal articles. Similar considerations have encouraged the inclusion of the medical texts in an appendix here. The issue of inaccessibility is highlighted by two texts in particular. One (**Appendix 11**) is a citation of "Strato" by Aelius Promotus, whose work on poisons has never been edited, but extracts from which are given in a running summary by Rohde in *Rheinisches Museum*. The other (**Appendix 10**) is one of a number of citations in Philumenus' work on poisonous animals, many of which have parallels in the thirteenth book of Aëtius Amidenus. The thirteenth book was the first of those which Zervos published in a series of articles in the Greek periodical *Athena*, in this case in 1906. That periodical is not widely available in libraries.³³ But Zervos' text of book 13 is incomplete, not including every chapter or, as we shall see, the whole of every chapter it does include. For the complete text one needs to use the sixteenth century Latin translation by Cornarius, one edition of which has been made available in facsimile on its website by the University of Paris 5. In the case that concerns us here, Philumenus cites Strato for the claim that shrews, when biting, aim for the testicles. The same information appears in the part of Aëtius Amidenus' text published by Zervos, with no mention of Strato. However, at the end of the chapter, which is included in Cornarius but *not* in Zervos, Aëtius cites Strato for the claim that the bite of a shrew can be cured by killing the shrew and placing it on the bite. And

³³ The text is indeed available in the *Thesaurus Linguae Graecae*, but without a textual apparatus or page references.

that information appears, in an abbreviated form and *without* mention of Strato, in a later part of Philumenus' chapter.³⁴ This could suggest that Philumenus too derived this claim from the Strato in question, and that there may be more material from Strato present in both authors beyond what they each attribute to him explicitly. This sort of material is indeed inherently subject to interpolation from several sources and to rearrangement. But, if we follow the policy of including all material that refers to "Strato" by name, then in the absence of any explanation of the discrepancy between Zervos and Cornarius the passage describing the use of the shrew itself as a remedy needs to be included;³⁵ the simplest way to do this is to append Philumenus' version to the part of his text that names Strato, and to give Aëtius' version — which is only easily accessible in Cornarius' Latin version — in a note in the apparatus.

4. Acknowledgments

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³⁴ The versions of the chapter in Zervos and in Cornarius generally correspond up until the last part. In particular, the reference to applying the shrew as a plaster on the bite is to be distinguished from a reference earlier in the chapter to using the shrew itself as a remedy by administering it in a drink; this is present in both versions, but is not attributed to Strato in either. The two ways of using the shrew are also distinguished, without reference to Strato, by Philumenus (33.6 and 33.8) and by Paul of Aegina, *Epitome* 5.12.1.

³⁵ Apart from a general critical reference to Cornarius' version in his introduction (p. 248, speaking of "errors that are neither few nor small"), Zervos does not refer to Cornarius' version in his apparatus. The relation between Cornarius' version and the Greek MSS, and the further speculative investigation of Aëtius' and Philumenus' sources, are I think best left to whoever takes on the task of producing a new edition of the Greek text of Aëtius' thirteenth book.

Abbreviations and Bibliography

(a) Abbreviations for collections and series

- AABT I. Düring, *Aristotle in the Ancient Biographical Tradition*, Göteborg/Stockholm: Almqvist & Wiksell, 1957.
- Anth. Pal.* *Anthologia Palatina*
- BT Bibliotheca Teubneriana
- CAG Commentaria in Aristotelem Graeca
- CB Collection Budé
- CCSL Corpus Christianorum Series Latina
- CPF *Corpus dei papiri filosofici greci e latini*, vol. iii *Commentari*, Florence: Olschki, 1995.
- DG H. Diels, *Doxographi Graeci*, Berlin: Reimer, 1879
- DK H. Diels and W. Kranz, *Die Fragmente der Vorsokratiker*, 6th ed, Berlin: Weidmann, 1951–52.
- FgrH F. Jacoby, *Die Fragmente der griechischen Historiker*, Berlin: Weidmann, 1923–58.
- FHG K. and T. Müller, *Fragmenta historicorum graecorum*, Paris: Didot, 1878–85.
- FHS&G W.W. Fortenbaugh, P.M. Huby, R.W. Sharples and D. Gutas, eds, *Theophrastus of Eresus: Sources for his Life, Writings, Thought and Influence*, Leiden: Brill, 1992.
- GCS Die griechischen christlichen Schriftsteller der ersten Jahrhunderte
- LCL Loeb Classical Library
- OCT Oxford Classical Texts
- Pal.* *Anthologia Palatina*
- PCG R. Kassel and C. Austin, *Poetae comici graeci*, Berlin: De Gruyter, 1984–.
- RE A. F. von Pauly et G. Wissowa, *Real-Encyclopädie der classischen Altertumswissenschaft*, Stuttgart: Metzler, 1894–1978
- RUSCH Rutgers University Studies in Classical Humanities
- SC Sources chrétiennes
- SFOD see Aristo and Lyco in section (b) below
- SPSV see Herclides in section (b) below
- SVF H. von Arnim, *Stoicorum Veterum Fragmenta*, Leipzig: Teubner, 1903–24.

(b) Editions used

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| <i>Academicorum philosophorum index Herculensis</i> | T. Dorandi, ed., <i>Filodemo: Storia dei filosofi, Platone e l'Accademia</i> , Naples: Bibliopolis, 1991 |
| Aelius Promotus, <i>De venen. anim.</i> | S. Ihm, Wiesbaden: Ludwig Reichert, 1995 |
| Aëtius Amidenus
books 1–4
book 13 | A. Olivieri, CMG vol.8.1, Leipzig: Teubner, 1935
S. Zervos in <i>Athena</i> 18 (1906) 264–92; Latin version by Cornarius (1549 ed.), available online at www.bium.univ-paris5.fr |
| Alexander of Aphrodisias
<i>In De sensu</i>
<i>In Topica</i> | P. Wendland (CAG vol.3.1) Berlin: Reimer, 1901
M. Wallies (CAG vol.2.2) Berlin: Reimer, 1891 |
| Alexander of Tralles, <i>Therapeutica</i> | T. Puschmann, <i>Alexander von Tralles</i> , Vienna: Braumüller, 1878–79 |
| Anaxarchus of Abdera | T. Dorandi, “I frammenti di Anassarco di Abdera,” <i>Atti e Memorie dell'Accademia Toscana “La Colombaria”</i> 59 (1994) 9–60 |
| Aristo of Ceos | P. Stork, W.W. Fortenbaugh, J.M. van Ophuijsen and T. Dorandi (= SFOD) in W.W. Fortenbaugh and S.A. White, eds., <i>Aristo of Ceos</i> (RUSCH 13), New Brunswick: Transaction, 2006, 1–177 |
| Aristotle
fragments

<i>Vita Aristotelis Menagiana</i> | V. Rose, <i>Aristotelis Fragmenta</i> , Leipzig: Teubner, 1886 (= Rose ³)
A. Westermann in C.G. Cobet, ed., <i>Diogenes Laertius, De clarorum philosophorum vitis</i> , Paris: Didot, 1878 |
| Athenaeus, <i>On Sieges</i> | R. Schneider, <i>Griechischer Poliorketiker</i> 3, Abh. Göttingen N.F. 12.5 (1912). |
| Augustine, <i>De civitate Dei</i> | B. Dombart and A. Kalb (CCSL 47–48), Turnhout: Brepols, 1955–65 |
| Basil the Great, <i>Homiliae in Hexaemeron</i> | E.A. de Mendieta and S.Y. Rudberg (GCS n.f.2) Berlin: Akademie Verlag, 1997 |
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(d) other abbreviations and symbols

Standard abbreviations and symbols are used. In particular,

- [] in a Greek or Latin *text*, words transmitted in the MSS that should be deleted;
- in an English *translation*, words that are not in the original text but have been supplied to indicate the sense;
- when used with *authors' names*, that the work in question is certainly or probably spurious (e.g. [Clement of Rome], *Recognitions* are attributed to Clement but are not by him).
- < > editorial additions to the Greek or Latin text
- app. apparatus
- fl. flourished (*floruit*)
- saec. century (*saeculum*)

Texts and Translations

VITA ET SCRIPTA

1 Diogenes Laertius 5.58–64 (ed. Dorandi, forthcoming)

- 58 Διεδέξατο δ' αὐτοῦ τὴν σχολὴν Στράτων Ἀρκεσιλάου
 Λαμψακηνός, οὗ καὶ ἐν ταῖς διαθήκαις ἐμνημόνευσεν·
 ἀνὴρ ἑλλογιμώτατος καὶ φυσικὸς ἐπικληθεὶς ἀπὸ τοῦ περὶ
 τὴν θεωρίαν ταύτην παρ' ὄντινούν ἐπιμελέστατα
 διατετριφέναι. ἀλλὰ καὶ καθηγήσατο Πτολεμαίου τοῦ
 Φιλαδέλφου καὶ ἔλαβε, φασί, παρ' αὐτοῦ τάλαντα
 ὀγδοήκοντα· σχολαρχεῖν δέ, καθά φησιν Ἀπολλόδωρος ἐν
 Χρονικοῖς, ἤρξατο τῇ τρίτῃ καὶ εἰκοστῇ καὶ ἑκατοστῇ
 Ὀλυμπιάδι, τῆς σχολῆς ἀφηγησάμενος ἔτη ὀκτωκαίδεκα.
- 59 Φέρεται δ' αὐτοῦ
 Περὶ βασιλείας τρία,
 Περὶ δικαιοσύνης τρία,
 Περὶ τάγαθου τρία,
 Περὶ θεῶν τρία,
 Περὶ ἀρχῶν τρία ἢ δύο,
 Περὶ βίων,
 Περὶ εὐδαιμονίας,
 Περὶ βασιλείας φιλοσοφίας,
 Περὶ ἀνδρείας,
 Περὶ τοῦ κενοῦ,
 Περὶ τοῦ οὐρανοῦ,
 Περὶ τοῦ πνεύματος,
 Περὶ φύσεως ἀνθρωπίνης,
 Περὶ ζωογονίας,
 Περὶ μίξεως,
 Περὶ ὕπνου,
 Περὶ ἐνυπνίων,
 Περὶ ὄψεως,
 Περὶ αἰσθήσεως,

1–6 *Suda* sv Στράτων (Σ 1185, t.4 p.442.7–11 Adler) 7–9 *Apollodorus*, *FGrH* 244 F 40

1 ante διεδέξατο *titulus* Στράτων *P¹ in marg.* *F² in marg.* *omittendum recte censuit Dorandi* αὐτοῦ *F*: αὐτὸν *BP* post σχολὴν *explicit caput in BP* Στράτων *om.* *B* Ἀρκεσιλάου ἢ Ἀρκεσίου *Suda* 3 περὶ *Cobet*: ἐπὶ Ω 5 διατετριφέναι *B* 6 φασί *om.* *F* 8 καὶ ἑκατοστῇ *om.* *B* 10 δ' *om.* *F* αὐτοῦ <βιβλία> *Huebn.*: αὐτοῦ <καὶ βιβλία ταῦτα> *Stephanus* 15 post
 →

LIFE AND WRITINGS

1 Diogenes Laertius 5.58–64 (ed. Dorandi, CB, forthcoming)¹

58 In succession to [Theophrastus] the school was taken over by Strato, son of Arcesilaus, from Lampsacus, whom [Theophrastus] also mentioned in his will. He was a man of very high repute and was given the title of “naturalist” because he occupied himself with this enquiry with a carefulness second to no-one. He also taught Ptolemy Philadelphus and received from him, as they say, eighty talents. He began to be scholarch, according to what Apollodorus says in his *Chronicles*, in the 123rd Olympiad,² and was head of the school for eighteen years.

59 His [works] that are in circulation [are]:

On Kingship, three [books].
On Justice, three [books],
On the Good, three [books]
On the Gods, three [books],
On Principles, three or two [books],
On [Ways of] Life,
On Happiness,
On the Royal Philosophy,³
On Courage,
On the Void,
On the Heaven,
On Breath,
On the Nature of Man,
On the Generation of Animals,
On Mixture,
On Sleep,
On Dreams,
On Sight,
On Sense-Perception,

¹ I am grateful to Tiziano Dorandi for letting me see his forthcoming edition of Diogenes Laertius, on which the apparatus to this fragment is based.

² 288–84 BC.

³ *On the Philosopher King*, Cobet: *On Kingship* and *On Philosophy* (two titles) Wehrli. See Dorandi's paper in the present volume.

12 *transpos.* F ἀρχῶν Ω: ἀρχῆς V 18 περὶ βασιλείας φιλοσοφίας BP: περὶ βασιλ^λ φιλ^λ F, *ex quo* Περὶ βασιλέως φιλοσόφου Cobet: Περὶ βασιλείας, <Περὶ> φιλοσοφίας Wehrli 21 τοῦ om. BP

- 30
 Περὶ ἡδονῆς,
 Περὶ χρωμάτων,
 Περὶ νόσων,
 Περὶ κρίσεων,
 Περὶ δυνάμεων,
 Περὶ τῶν μεταλλικῶν, 35
 Μηχανικόν,
 Περὶ ἱλίγγου καὶ σκοτώσεων,
 Περὶ κούφου καὶ βαρέος,
 Περὶ ἐνθουσιασμοῦ,
 Περὶ χρόνου, 40
 Περὶ τροφῆς καὶ αὐξήσεως,
 Περὶ τῶν ἀπορουμένων ζώων,
 Περὶ τῶν μυθολογουμένων ζώων,
 Περὶ αἰτιῶν,
 Λύσεις ἀπορουμένων, 45
 Τόπων προοίμια,
 Περὶ τοῦ συμβεβηκότος,
 60 Περὶ τοῦ ὄρου,
 Περὶ τοῦ μᾶλλον καὶ ἥττον,
 Περὶ ἀδίκου, 50
 Περὶ τοῦ προτέρου καὶ ὑστέρου,
 Περὶ τοῦ προτέρου γένους,
 Περὶ τοῦ ἰδίου,
 Περὶ τοῦ μέλλοντος,
 Εὐρημάτων ἑλεγχοὶ δύο, 55
 Ὑπομνήματα, ἃ διστάζεται,
 Ἐπιστολαὶ ὧν ἀρχή· “Στράτων Ἀρσινόῃ εὖ
 πράττειν.”
 <Στίχοι> μ(υριάδες) λγ´ βυκ´.
 Τοῦτόν φασιν οὕτω γενέσθαι λεπτόν ὡς ἀναισθήτως 60
 τελευτῆσαι. καὶ ἔστιν ἡμῶν εἰς αὐτόν οὕτως ἔχον·

60–61 *Excerptum magnum Diogenis* 44 (cod. Vat. gr. 96 XII s. (p.257.24–25 Marcovich, BT t.2, 1999)

35 μετάλλων Capelle 35–36 *unum titulum exhibent BP, in duos dividit Menagius*: Περὶ τῶν μεταλλικῶν μηχανημάτων Stephanus 36 μηχανικόν B: μηχανικῶν P: om. F 37 ἱλίγγου Reiske: λιμοῦ Ω 38 βαρέος P: βαρέως BF 44 αἰτιῶν F 44–45 *unus titulus in BP* 45 λύσεις BF: λύσις P 46–47 προοίμια περὶ τοῦ συμβεβηκότος *unus titulus in F* 50 ἀδίκου] →

On Pleasure,
 On Colours,
 On Diseases,
 On Crises,
 On Powers,
 On Things Mined,
 Mechanics,⁴
 On Vertigo and Dizziness,⁵
 On Light and Heavy,
 On Inspiration,
 On Time,
 On Nutrition and Growth,
 On Problematic Animals,
 On Mythological Animals,
 On Causes,
 Solutions to Puzzles,
 Prologues to Topics,
 On Accident,
 On Definition,
 On the More and Less,
 On the Unjust Man,
 On the Prior and Posterior,
 On the Prior Genus,
 On Propert[ies],
 On the Future,
 Two Refutations on Discoveries,
 Memoranda (dubious),
 Letters beginning "Strato to Arsinoe, greeting."
 [Total] 332,420 [lines].⁶

They say that he became so thin that he died without being conscious of it. And I have [written a poem] on him as follows:

⁴ The MSS give this and the preceding as a single title, which Stephanus emended to *On Mining Machinery*.

⁵ So Reiske: *On Hunger and Dizziness* MSS.

⁶ The number is almost certainly corrupt.

ἀνίσου *Moraux* 51 τοῦ *om. F* καὶ ὑστέρου *om. BP* 52 τοῦ *om. F* 54
post μέλλοντος *iteravit* περὶ ἀδίκου· περὶ τοῦ προτέρου καὶ ὑστέρου *BP*: περὶ
 ἀδίκου *F* 55–56 δύο ὑπομνήματα *unus titulus F* 56 ἃ *om. BP* 57 ἡ
 ἀρχὴ *F* 59 στίχοι *add. Marcovich* μὲν βυκ' *von der Muehl*: μ^{ατ} βυκ *B*:
 μ^{ατ} βυκ *P*: μ βυκ *F*

λεπτὸς ἀνὴρ δέμας ἦν, †εἰ μὴ προσέχης ἀποχρησμοῖς†.

Στράτωννα τοῦτόν φημί σοι,

Λάμψακος ὃν ποτ' ἔφυσεν· αἰεὶ δὲ νόσοισι παλαίων
θνήσκει λαθὼν, οὐδ' ἦσθετο.

65

61 Γεγόνασι δὲ Στράτωνες ὀκτώ· πρῶτος Ἰσοκράτους
ἀκροατῆς· δεῦτερος αὐτὸς οὗτος· τρίτος ἱατρός, μαθητῆς
Ἑρασιστράτου, ὡς δέ τινες, τρόφιμος· τέταρτος ἱστορικός,
Φιλίππου καὶ Περσέως τῶν Ῥωμαίοις πολεμησάντων
γεγραφὼς πράξεις· <. . > ἕκτος ποιητῆς ἐπιγραμματῶν·
ἑβδομος ἱατρός ἀρχαῖος, ὡς Ἀριστοτέλης φησὶν· ὄγδοος
περιπατητικός, βεβιωκὼς ἐν Ἀλεξανδρείᾳ.

70

Τοῦ δ' οὖν φυσικοῦ φέρονται καὶ διαθῆναι τοῦτον
ἔχουσαι τὸν τρόπον· “Τάδε διατίθεμαι, ἐάν τι πάσχω. τὰ
μὲν οἴκοι καταλείπω πάντα Λαμπυρίωνι καὶ Ἀρκεσιλάῳ.
ἀπὸ δὲ τοῦ Ἀθήνησιν ὑπάρχοντός μοι ἀργυρίου πρῶτον
μὲν οἱ ἐπιμεληταὶ τὰ περὶ τὴν ἐκφορὰν ἐπιμεληθήτωσαν
καὶ ὅσα νομίζεται μετὰ τὴν ἐκφορὰν, μηθὲν μῆτε

75

62 περιεργον ποιοῦντες μῆτ' ἀνελεύθερον. ἐπιμεληταὶ δὲ
ἔστωσαν τῶν κατὰ τὴν διαθήκην οἶδε· Ὀλύμπιος,
Ἀριστείδης, Μνησιγένης, Ἴπποκράτης, Ἐπικράτης,
Γοργύλος, Διοκλῆς, Λύκων, Ἄθανις. καταλείπω δὲ τὴν
μὲν διατριβὴν Λύκωνι, ἐπειδὴ τῶν ἄλλων οἱ μὲν εἰσι
πρεσβύτεροι, οἱ δὲ ἄσχολοι. καλῶς δ' ἂν ποιοῖεν καὶ οἱ
λοιποὶ συγκατασκευάζοντες τοῦτω. καταλείπω δ' αὐτῷ καὶ
τὰ βιβλία πάντα, πλην ὧν αὐτοὶ γεγράφαμεν, καὶ τὰ σκευή

80

85

62–65 *Anth. Pal. vii.111* 68–70 *Strato, FGrH 168 T 1* 71 *Aristoteles, fr.374*
*Rose*³ 73–111 *Lyco, fr.4 SFOD* 82–84 *Lyco, fr.4 Wehrli*

62–65 (εἰ—ἦσθετο) *om.* B¹ 62 εἰ μὴ προσέχης ἀποχρησμοῖς P¹(Q): εἰμὶ
προσεχρίσατο χρῆσμοῖς F (εἰμὶ προσεχρήσατο χρῆσμοῖς P¹): εἰ μὴ προσέχης,
ἀπόχρημος *Pal.* (εἰ μὴ προσέχης, ἀπόχρη μοι *Pal*^C, *quod accepit Stadtmueller*):
εἰ μὴ προσεχρήσατο χραισμαῖς *Menagius*: εἰ μοι προσέχης/προσέχεις, ἀπὸ
χρισμῶν/χρισμοῦ *Jacobs*: ἢ μὴ προσεχῆς· ἀπόχρη μοι *Hermann*: *totum cor-*
ruptum et a scriba ad lacunam complendam insertum censuit Waltz 63–65
add. B² 63 τοῦτον] τοῦτ' οὖν *Stadtmueller* σοι B²PF: γε *Pal.* *Stadtmuel-*
ler 64 Λάμψακος ὃν *Menagius*: λαμψακηνὸν ὃν B²P¹: τὸν λαμψακηνὸν ὃν F:
λαμψακινόν· λαμψακὸς ὃν *Pal.* ποτ' ἔφυσεν F *Pal.*: ποτὲ φύσεν B²: ποτὲ P
65 ἦσθετο θανάτου P⁴ 67 ἱατρός *om.* F 68 ὡς – τρόφιμος *om.* F 70
γεγραφὼς πράξεις F² *in marg.* *lacunam indicaverunt D et Menagius* 76 μοι
om. B 78 μηθὲν BP: μηδὲν F μῆτε BP: τι F 79 ἂν ἐλεύθερον P¹(Q)
80 Ὀλύμπιος *Huebner, cf. 100*: ὀλύμπιος Ω 81 μνησιγένης B γοργύλος
BF 82 ἄθανις F: ἀθάνις B: ἀθάνης P 85 τοῦτω F: τοῦτο BP

There was a man thin in body, †if you do not pay
 attention to the oracles†;⁷
 This man I am telling you of was Strato,
 Whom Lampsacus once bore; constantly wrestling
 with illness
 He died without realising it, and was not
 aware of it.

- 61 There have been eight people called Strato. The first was a pupil of Isocrates; the second this person [whom I am discussing]; the third was a doctor, a pupil of Erasistratus, or as some say, his foster-child; the fourth a historian, who wrote of the deeds of Philip and Perseus who fought against the Romans . . .⁸ the sixth was a poet who wrote epigrams;⁹ the seventh was an ancient doctor, as Aristotle says; the eighth was a Peripatetic who lived in Alexandria.

- Well, from the naturalist there is also extant his will, as follows: “I make these arrangements, if anything should happen to me. I leave all the things in my house to Lampyrion and Arcesilaus. Of the money which I possess in Athens, first of all let the executors take care of the funeral and all the things which are
 62 customary after the funeral, doing nothing either beyond [what is required] nor in a mean [way]. Let the executors of what is in the will be these: Olympichus, Aristides, Mnesigenes, Hippocrates, Epicrates, Gorgylus, Diocles, Lycon, Athanis. I leave the school to Lyco, because of the others some are too old and others do not have the leisure. But the others would do well if they maintained a joint establishment with him. I also leave him all the books, except those which we have written ourselves, and all the

⁷ The text is incurably corrupt. The attempts at emendation give “if he had not used ointments,” “if he had not used remedies,” “— if you attend to me — as a result of ointments,” “if you do not pay attention, I am satisfied,” or “or he did not take care; that’s enough for me.”

⁸ The fifth is missing due to a lacuna in the text.

⁹ The collection of which *Palatine Anthology* 12 is an enlargement.

πάντα κατὰ τὸ συσσίτιον καὶ τὰ στρώματα καὶ τὰ ποτήρια.
 δότωσαν δὲ οἱ ἐπιμεληταὶ Ἐπικράτει πεντακοσίας δραχμὰς
 63 καὶ τῶν παίδων ἓνα ὃν ἂν δοκῇ Ἀρκεσίλαφ. καὶ πρῶτον
 μὲν Λαμπυρίων καὶ Ἀρκεσίλαος ἀράσθωσαν τὰς συνθήκας 90
 ἃς ἔθετο Δαΐππος ὑπὲρ Ἡραίου· καὶ μηθὲν ὀφειλέτω μήτε
 Λαμπυρίωνι μήτε τοῖς Λαμπυρίωνος κληρονόμοις, ἀλλ'
 ἀπηλλάχθω παντὸς τοῦ συμβολαίου. δότωσαν δ' αὐτῷ καὶ
 οἱ ἐπιμεληταὶ ἀργυρίου πεντακοσίας δραχμὰς καὶ τῶν
 παίδων ἓνα, ὃν ἂν δοκιμάζῃ Ἀρκεσίλαος, ὅπως ἂν πολλὰ 95
 συμπεπονηκῶς ἡμῖν καὶ παρεσχημένος χρεῖας ἔχῃ βίον
 ἱκανὸν καὶ εὐσχημονή. ἀφίημι δὲ καὶ Διόφαντον ἐλεύθερον
 καὶ Διοκλέα καὶ Ἄβουν· Σιμίαν δὲ ἀποδίδωμι Ἀρκεσίλαφ.
 ἀφίημι δὲ καὶ Δρόμωνα ἐλεύθερον. ἐπειδὴν δὲ παραγένηται
 Ἀρκεσίλαος, λογισάσθω Ἡραῖος μετ' Ὀλυμπίχου καὶ 100
 Ἐπικράτους καὶ τῶν ἄλλων ἐπιμελητῶν τὸ γεγονὸς
 64 ἀνάλωμα εἰς τὴν ἐκφορὰν καὶ τᾶλλα τὰ νομιζόμενα. τὸ δὲ
 περιὸν ἀργύριον κομισάσθω Ἀρκεσίλαος παρ' Ὀλυμπίχου,
 μηθὲν ἐνοχλῶν αὐτὸν κατὰ τοὺς καιροὺς καὶ τοὺς χρόνους·
 ἀράσθω δὲ καὶ τὰς συνθήκας Ἀρκεσίλαος ἃς ἔθετο 105
 Στράτων πρὸς Ὀλύμπιχον καὶ Ἀμεινίαν, τὰς κειμένας
 παρὰ Φιλοκράτει Τεισαμενοῦ. τὰ δὲ περὶ τὸ μνημεῖον
 ποιείτωσαν ὥς ἂν δοκῇ Ἀρκεσίλαφ καὶ Ὀλυμπίχῳ καὶ
 Λύκωνι.”

Καὶ αἶδε μὲν εἰσιν αἱ φερόμεναι αὐτοῦ διαθήκαι, καθά 110
 που συνήγαγε καὶ Ἀρίστων ὁ Κεῖος. αὐτὸς δὲ ὁ Στράτων
 ἀνὴρ γέγονε, καθάπερ καὶ ἄνω δεδήλωται, πολλῆς τῆς
 ἀποδοχῆς ἄξιος, διατρίψας ἐν παντὶ λόγων εἶδει καὶ
 μάλιστά γε ἐν τῷ καλουμένῳ φυσικῷ, ὅπερ εἶδος
 ἀρχαιότερόν τε καὶ σπουδαιότερον. 115

110–11 *Aristo Ceus, fr.16 SFOD (fr.31 Wehrli)*

87 κατὰ BP: καὶ F 89 ἓνα BP: ἕνεκα F καὶ (alt.) *Menagius*: δὲ B²PF:
 om. B¹ 90 λαμπυρίων F 91 διέθετο F ἡραίου B: ἡραίου F: ἱραίου
 P μηθὲν Wehrli: μηδὲν Ω ὀφειλέτω F: ἀφειλέτω B: ὠφειλέτω P 94
 δραχμὰς πεντακοσίας F 95 ἓνα ὃν ἂν D: ἕνδον ἕαν B: ἓνα ὃν ἕαν P: ἓνα ἕαν
 F 96 παρεσχημένος BP: παρεσχόμενος F 97 εὐσχημονή F: εὐσχημονη
 B¹: εὐσχημονή B²: εὐσχημων ἢ P: εὐσχήμονα Cobet 98 ἄβουν F σιμίαν
 BP: σιμμίαν F 99 δρόμονα B 100 Ἡραῖος Wehrli: ἔραῖος B¹: ἥραῖος B²:
 ἱραῖος P: ἡραῖον F 102 τᾶλλα Cobet 104 ἐνοχλῶν BP: ὀχλῶν F τοὺς (alt.)
 om. F 107 Τεισαμενοῦ Dorandi: τεισαμενοῦ F: τισαμένου P: τισαμεινίου B:
 †Τεισαμενοῦ† sic Wehrli: Τισαμενοῦ Cobet 108 ποιήτωσαν B 112 καθάπερ
 BP: καθά F 113 διατρίψας BPF: διαπρέψας Frobenius 114 εἶδος F²mg.

- equipment relating to the common meals and the covers for the couches and the drinking-vessels. Let the executors give Epicrates five hundred drachmas and one of the slaves, whichever
- 63 Arcesilaus decides. And first let Lampyrion and Arcesilaus cancel the agreement which Daïppus made on behalf of Heraeus; and let him owe nothing either to Lampyrion or to Lampyrion's heirs, but let him be freed from the whole contract. Let the executors also give him five hundred drachmas of silver and one of the slaves, whichever Arcesilaus approves, so that, having laboured much with us and provided services he may have an adequate livelihood and be respectable. I also grant freedom to Diophantus and Diocles and Abous. Simias I give to Arcesilaus. I also grant freedom to Dromo. When Arcesilaus arrives, let Heraeus, together with Olympichus and Epicrates and the other executors, reckon up the expenditure that has been made on the funeral and the other things that are customary. Let Arcesilaus take the remaining money from Olympichus, not causing him any trouble about
- 64 the time and the occasion. Let Arcesilaus cancel the agreements which Strato made with Olympichus and Ameinias, the ones that are in the keeping of Philocrates son of Teisamenes. Let them deal with the matters concerning the memorial as Arcesilaus and Olympichus and Lyco may decide."

This is his will as it is recorded, according, I suppose, to the collection made by Aristo of Ceos. Strato himself was a man, as has also been shown above, worthy of much approval, occupying himself with¹⁰ every type of study, and chiefly in what is called [the study] of nature, which is a more ancient and more important type.

¹⁰ So the earliest and primary MSS. "excelling in" is the reading of the editio princeps by Frobenius.

- 2** Plutarch, *De exilio* 14 605ab (BT t.3 p.525.23–526.4 et 526.8–11 Paton–Pohlenz–Sieveking 1929)

εἰ δὲ φήσει τις ὅτι δόξαν οὗτοι καὶ τιμὰς ἐθήρευον, ἐπὶ τοὺς
σοφούς ἐλθὲ καὶ τὰς σοφὰς Ἀθήνησι σχολὰς καὶ
διατριβάς· ἀναπέμψασαι τὰς ἐν Λυκείῳ τὰς ἐν Ἀκαδημείᾳ
p.526 τὴν Στοὰν τὸ Παλλάδιον τὸ Ὡιδεῖον. εἰ τὴν Περιπατη-
B τικὴν ἀσπάζη μάλιστα καὶ τεθαύμακας, Ἀριστοτέλης ἦν 5
ἐκ Σταγίρων, Θεόφραστος ἐξ Ἑρέσου, Στράτων ἐκ
Λαμψάκου, Λύκων ἐκ Τρωάδος, Ἀρίστων ἐκ Κέω,
Κριτόλαος Φασηλῆτης· . . . τίς οὖν τούτους ἐδίωξεν; οὐδεὶς·
ἀλλ' αὐτοὶ διώκοντες ἡσυχίαν, ἥς οὐ πάνυ μέτεστιν οἴκοι
τοῖς ἡντιναοῦν δόξαν ἢ δύναμιν ἔχουσι, τὰ μὲν ἄλλα λόγοις 10
τοῦτο δ' ἔργοις ἡμᾶς διδάσκουσι.

1–11 *Theophrastus*, fr.25 *FHS&G*; *Lycō*, fr.2 *SFOD* (fr.1 *Wehrli*); *Aristo*, fr.3 *SFOD* (fr.3 *Wehrli*) 5–11 *Stobaeus*, *Ecl.* 3.40.4 (p.736.8–737.3 *Wachsmuth*),
ex Plutarcho, *Stratone nominato* 8 *Critolaus*, fr.1 *Wehrli*

6 Ἑρέσου *Victorius*: Ἑρεσίου *Stobaeus*: Ἑφέσου Ω 7 Λύκων *Xylander*:
Γλύκων Ω: Γλαύκων *Stobaeus* 8 Κριτόλαος Φασηλῆτης (*et ea quae omisi-*
mus, ubi de Stoicis agitur) *om.* *Stobaeus* 9 ἡσυχίαν καὶ σπουδὴν *Stobaeus*
11 ἡμᾶς ἔργῳ *Stobaeus*

- 3** [Galenus], *De historia philosophica* 3 (DG p. 600.19–601.2 Diels 1879)

Ἀριστοτέλης δὲ Πλάτωνι πάνυ πολὺν χρόνον
συνδιαγεγονῶς δόγμασιν ἐτέροις ἑαυτὸν προσενέμηκεν.
p.601 ὅσπερ Θεόφραστον προεστήσατο τῆς κατ' αὐτὸν αἰρέσεως
B καὶ τὸν Στράτωνα προήγαγεν εἰς ἰδιὸν τινα χαρακτῆρα
φυσιολογίας. 5

3 ὅσπερ *Diels*: ὄνπερ *AN*: οὐπερ *B* κατ' αὐτὸν *Diels*: κατὰ τῶν *AB*: *in heresi*
sua *N* 4 προήγαγεν *Diels*: προσήγαγεν *ABN* 5 *post* φυσιολογίας *lacu-*
nam statuit *Diels*, *sed ob hanc rem solam, quod in iis quae sequuntur primo loco*
memorantur Epicurus Metrodorusque, quorum mentio a Dielsio ad p.601.15–18
transfertur, deinde Pythagoras; vide DG p.243.

- 4** Diogenes Laertius 5.53 et 5.56 (ed. Dorandi, forthcoming)

τὸν δὲ κῆπον καὶ τὸν περίπατον καὶ τὰς οἰκίας τὰς πρὸς τῷ

- 2 Plutarch, *On Exile* 14 605ab (BT vol.3 p.525.23–526.4 et 526.8–11 Paton–Pohlenz–Sieveking 1929)

But if someone says that these [the poets] were seeking reputation and honours [by travelling abroad], turn to the wise and to the wise schools and discussions in Athens. Consider the [schools] in the Lyceum, the Academy, the Stoa, the Palladion,¹ the Odeon.² If
p.526 you chiefly follow and admire the Peripatetic [school], Aristotle
B was from Stagira, Theophrastus from Eresus, Strato from Lamp-
sacus, Lyco from the Troad, Aristo from Ceos, Critolaus was from Phaselis . . . So who pursued these [into exile]? No-one. They themselves, pursuing leisure, of which there is not much in their home [town] for those who have any reputation or influence, teach us other things by words and this [the right attitude to living away from one's native land] by their deeds.

¹ A temple southeast of Athens. Clitomachus taught there before succeeding Carneades as head of the Academy: *Academicorum philosophorum Index Herculanensis* xxiv.36 (p.162.2), xxv.8 (p.162.7) and xxx.9 (p.167.10) in Dorandi 1991.

² Chrysippus taught there: Diogenes Laertius 7.184; Plutarch, *On Stoic Self-Contradictions* 2 1033e. Cf. also Athenaeus, *Deipnos.* 8.15 336e.

- 3 Pseudo-Galen, *History of Philosophy* 3 (DG p. 600.19–601.2 Diels 1879)

Aristotle, who had spent a very long time with Plato, dedicated himself to different doctrines. He put Theophrastus at the head of
p.601 his school, and led Strato into a certain individual style of studying nature.

- 4 Diogenes Laertius 5.53 and 5.56 (ed. Dorandi, *CB*, forthcoming)¹

I give the garden and the walk and all the houses in front of

κήπῳ πάσας δίδωμι τῶν γεγραμμένων φίλων ἀεὶ τοῖς
 βουλομένοις συσχολάζειν καὶ συμφιλοσοφεῖν ἐν αὐταῖς,
 ἐπειδήπερ οὐ δυνατόν πᾶσιν ἀνθρώποις ἀεὶ ἐπιδημεῖν, μήτ'
 ἐξαλλοτριούσι μήτ' ἐξειδαζομένου μηδενός, ἀλλ' ὥς ἂν
 5 ἱερὸν κοινῇ κεκτημένοις, καὶ τὰ πρὸς ἀλλήλους οἰκείως
 καὶ φιλικῶς χρωμένοις, ὥσπερ προσήκον καὶ δίκαιον.
 ἔστωσαν δὲ οἱ κοινωνοῦντες Ἱππαρχος, Νηλεὺς, Στράτων,
 Καλλῖνος, Δημότιμος, Δημάρατος, Καλλισθένης, Μελάν-
 10 τής, Παγκρέων, Νίκιππος. ἐξεῖναι δὲ βουλομένῳ φιλο-
 σοφεῖν καὶ Ἀριστοτέλει τῷ Μηδίου καὶ Πυθιάδος υἱῷ
 καὶ μετέχειν τούτων· καὶ αὐτοῦ πᾶσαν ἐπιμέλειαν
 ποιεῖσθαι τοὺς πρεσβυτάτους, ὅπως ὅτι μάλιστα προαχθῇ
 56 κατὰ φιλοσοφίαν. . . . ἐπιμελεῖται δὲ ἔστωσαν τῶν ἐν
 τῇ διαθήκῃ γεγραμμένων Ἱππαρχος, Νηλεὺς, Στράτων,
 15 Καλλῖνος, Δημότιμος, Καλλισθένης, Κτήσαρχος.

1–16 *ex testamento Theophrasti* (fr.1 311–23 et 356–57 FHS&G) 11 *Sextus Empiricus, Adv. math.* 1.258 (t.3 p.64.23–24 Mau)

3 αὐταῖς F: αὐτῶ BP 4 ἀεὶ (2) *post* ἀνθρώποις *transp.* F 5 ἐξαλλοτριούσι PF:
 ἐξ ἀλλοτρίου** B: ἐξαλλοτριουμένου *Emperius Opusc.* (1847) p.323 μήτ'
 ἐξειδαζομένου—ἂν *om.* B¹ *spatio 2 versuum relicto*, μήτε ἐξ ἰδιαζομένου μηδενός
et ἀνιαρὸν *add.* B² μήτε B²P: μὴ δὲ F ἐξειδαζομένου PF: ἐξ ἰδιαζομένου B²
 6 κοινῇ BP: κοινοὶ F 6–7 καί—χρωμένοις F^{2mg} 9 καλλῖνος BP: καλλίνικος F
 10 μελάντης BF: μέλαντις P πανκρέων BP 11 καὶ (*pr.*) *om.* F μηδίου
 BF¹: μειδίου PF²: Μητροδώρου *Nunnesius, Vita Arist.* (1621²) p.53 (*coll. Sext.*
Emp. Adv. math. 1.258) πυθιάδος BP: μυθιάδος F

5A Clemens Alexandrinus, *Stromata* 1.14.63.4 (GCS p.40.9–12
 Stählin–Fruchtel–Treu 1985)

παρὰ Πλάτωνι Ἀριστοτέλης φιλοσοφήσας μετελθὼν εἰς τὸ
 Λύκειον κτίζει τὴν Περιπατητικὴν αἵρεσιν. τοῦτον
 διαδέχεται Θεόφραστος, ὃν Στράτων, ὃν Λύκων, εἶτα
 Κριτόλαος, εἶτα Διόδωρος.

1–4 *Theophrastus* fr.11 no.5 FHS&G; *Lycos* fr.3A SFOD (fr.1¹ Wehrli); *Critolaus*
 fr.4 Wehrli; *Diodorus Tyrius* fr.1 Wehrli

5B *Vita Aristotelis Hesychii* 9 (AABT 82.18–21 Düring 1957)

διάδοχοι δ' αὐτοῦ τῆς σχολῆς κατὰ τάξιν ἐγένοντο οἶδε·

the garden to those of my friends recorded here who from time to time wish to form a school together and engage in philosophy together in them, since it is not possible for all people to live locally all the time, not alienating them and with no-one making them private property, but possessing them in common like a sacred place, and treating each other in the manner of members of the same household and in a friendly way, as is fitting and just. Let those who have them in common be Hipparchus, Neleus, Strato, Callinus, Demotimus, Demaratus, Callisthenes, Melantes, Pancreon, Nicippus. Let Aristoteles the son of Meidias and Pythias too have a share in these things, if he wishes to engage in philosophy; and let the older men take full care of him, so that
56 he may be advanced in philosophy as much as possible. . . . Let the executors of what has been written in the will be Hipparchus, Neleus, Strato, Callinus, Demotimus, Callisthenes, Ctesarchus.

¹ From the will of Theophrastus (fr.1 FHS&G). I am grateful to Tiziano Dorandi for having let me see the draft of his forthcoming edition of Diogenes Laertius, on which the apparatus to the present fragment is based.

5A Clement of Alexandria, *Miscellanies* 14.63.4 (GCS p.40.9–12 Stählin–Fruchtel–Treu 1985)

After engaging in philosophy with Plato, Aristotle transferred to the Lyceum and founded the Peripatetic school. His successor was Theophrastus, his [in turn] Strato, his Lyco, then Critolaus, then Diodorus.¹

¹ Clement's list of heads of the school omits at least Ariston of Ceos between Lyco and Critolaus.

5B Hesychius' *Life of Aristotle* 9 (AABT 82.18–21 Düring 1957)

His [Aristotle's] successors in the school¹ were in order the

40 **Strato of Lampsacus**

Θέοφραστος, Στράτων, Πραξιτέλης, Λύκων, Ἀρίστων,
Λυκίσκος, Πραξιφάνης, Ἰερώνυμος, Πρύτανις, Φορμίων,
Κριτόλαος.

1–4 *Vita Aristotelis Menagiana* p.402.20–23 Westermann; *Aristoteles, Fragmenta* p.10.19–22 Rose³; *Theophrastus* fr.11 no.7 FHS&G; *Lycō* fr.3B SFOD (fr.6 Wehrli); *Aristo Ceus*, fr.4A SFOD (fr.7 Wehrli); *Praxiphanes* fr.3 Wehrli; *Hieronimus*, fr.3A White (fr.2 Wehrli); *Critolaus* fr.3 Wehrli

6 Diogenes Laertius 5.68 (Lycō, fr.1 SFOD 2004)

Ἀφηγήσατο δὲ τῆς σχολῆς ἔτη τέτταρα πρὸς τοῖς τετταράκοντα, Στράτωνος αὐτὸν ἐν ταῖς διαθήκαις καταλιπόντος κατὰ τὴν ἑβδόμην καὶ εἰκοστὴν καὶ ἑκατοστὴν Ὀλυμπιάδα.

1–4 *Lycō*, fr.1.41–44 SFOD (fr.5 Wehrli)

2 αὐτὴν Long, sed cf. Stork ad loc.

7 Stobaeus, Eclogae 1.16.1 (p.149.6–7 Wachsmuth 1884)

Ἀρίσταρχος Σάμιος μαθηματικός, ἀκουστής Στράτωνος, φῶς εἶναι τὸ χρῶμα τοῖς ὑποκειμένοις ἐπιπίπτον.

1–2 *Aëtius* 1.15.5 Diels (DG p.313b16–18); *omisit* [Plutarchus]

2 ἐπιπίπτον Canter: ἐπιπίπτων FP

8A Cicero, De finibus 5.12–13 (OCT p.177.9–178.2 Reynolds 1998)

quod maxime efficit Theophrasti de beata vita liber, in quo multum admodum fortunae datur. quod si ita se habeat, non possit beatam vitam praestare sapientia. haec mihi videtur delicatior, ut ita dicam, molliorque ratio quam virtutis vis gravitasque postulat. quare teneamus Aristotelem et eius filium Nicomachum, cuius accurate scripti de moribus libri dicuntur illi quidem esse Aristoteli, sed non video cur non potuerit patri similis esse filius. Theophrastum tamen adhibeamus ad pleraque, dum modo plus in virtute teneamus quam ille tenuit firmitatis et roboris. simus igitur contenti his. namque horum posteriores meliores illi quidem mea sententia quam reliquarum philosophi disciplinarum,

following: Theophrastus, Strato, Praxiteles, Lyco, Aristo, Lyciscus, Praxiphanes, Hieronymus, Prytanis, Phormio, Critolaus.

¹ The list is one of Peripatetics, perhaps of Peripatetic teachers (see the note to Hieronymus, fr.3A White), rather than of heads of the Lyceum.

6 Diogenes Laertius 5.68 (Lyco, fr.1 SFOD 2004)

[Lyco] led the school for forty-four years, Strato having appointed him [as scholarch]¹ in his will in the 127th Olympiad.²

¹ Long's emendation gives "having left [the school to him]," but the change is unnecessary.

² 274–70 BC.

7 Stobaeus, *Selections* 1.16.1 (p.149.6–7 Wachsmuth 1884)

Aristarchus of Samos the astronomer, a pupil of Strato, [said] that light is the colour which falls on the underlying objects.

8A Cicero, *On Ends* 5.12–13 (OCT p.177.9–178.2 Reynolds 1998)

This [disagreement within the Peripatetic school] is produced to the greatest extent by Theophrastus' book *On the Happy Life*, in which a very great [influence] is granted to fortune. If this is so, wisdom cannot [on its own] produce a happy life. This seems to me an account which is less robust, if I can put it that way, and less tough than the power and weightiness of virtue requires. So let us hold to Aristotle and his son Nicomachus (whose carefully written books on ethics are indeed said to be by Aristotle [himself], though I do not see why the son could not be like the father). Theophrastus on the other hand we should use in most [contexts], provided that we give virtue more firmness and strength than he did.

42 Strato of Lampsacus

sed ita degenerant ut ipsi ex se nati esse videantur. primum Theophrasti, Strato, physicum se voluit; in quo etsi est magnus, tamen nova pleraque et perpauca de moribus. huius, Lyco, oratione locuples, rebus ipsis ieiunior. concinnus deinde et elegans huius, Aristo, sed ea quae desideratur a magno philosopho gravitas in eo non fuit; scripta sane et multa et polita, sed nescio quo pacto auctoritatem oratio non habet.

1–10 *Theophrastus, fr.498 FHS&G* 10–20 *Lyco, fr.11 SFOD (fr.17 Wehrli)*
17–20 *Aristo Ceus, fr.9 SFOD (fr.10 Wehrli)*

3 praestare vitam β 8 patris Lambinus 15 de P: om. rell. 16 lyco ε: lico
SR: lisias P: om. spat. rel. φ

8B Cicero, Academica Posteriora 1.33–34 (BT p.14.21–15.5 Plasberg 1922)

Aristoteles igitur primus species quas paulo ante dixi labefactavit, quas mirifice Plato erat amplexatus, ut in iis quiddam divinum esse diceret. Theophrastus autem, vir et oratione suavis et ita moratus ut prae se probitatem quandam et ingenuitatem ferat, vehementius etiam fregit quodam modo auctoritatem veteris disciplinae; spoliavit enim virtutem suo decore imbecillamque reddidit, quod negavit in ea sola positum esse beate vivere. Nam Strato eius auditor quamquam fuit acri ingenio tamen ab ea disciplina omnino semovendus est; qui cum maxime necessariam partem philosophiae, quae posita est in virtute et in moribus, reliquisset totumque se ad investigationem naturae contulisset, in ea ipsa plurimum dissedit a suis.

3–8 *Theophrastus, fr.497 FHS&G*

9 Athenaeus, De machinis 4.7–5.7 (p.8.18–10.9 apud R. Schneider, *Griechischer Poliorketiker* 3, Abh. Göttingen N.F. 12.5 [1912]).

οἱ δὲ γράφοντές τι ἢ παραγγέλλοντες ἡμῖν καὶ τῆς ὠφελείας εἵνεκα δοκοῦντες αὐτὸ πράττειν οὐκ ἀπεικόντως, πολυγραφοῦντες εἰς οὐκ ἀναγκαίους λόγους καταναλίσκουσι τὸν χρόνον, ὅπως ἐμφήνωσι τὴν ἑαυτῶν πολυ-

13

Let us then be content with these. For their successors were indeed in my opinion superior to the philosophers of the other schools, but they became degenerate in such a way that they seemed to have no ancestry. First of all [the successor] of Theophrastus, Strato, wanted to be a [student of] nature; even though he is important in this [field], most [of his doctrines] were novel, and [there is] very little about ethics. His [successor] Lyco, was well-resourced in speaking, but rather lacking in [actual] content. His successor Aristo was a harmonious and elegant [speaker], but
 p.178 he did not have the seriousness that one looks for in a great philosopher; certainly his writings are both numerous and polished, but somehow or other what he says does not carry any authority.

8B Cicero, *Posteriora Academics* 1.33–34 (BT p.14.21–15.5 Plasberg 1922)

So Aristotle was the first to weaken those Forms which I spoke of a short while ago, which Plato had embraced in a marvellous way, so that he said that there was something divine in them. Theophrastus, a man who was both pleasant in his oratory and so moral that he displayed a certain honesty and nobility [of spirit], in a certain way shattered the authority of the old teaching even more violently: for he robbed virtue of her glory and made her weak, when he denied that living happily depended on her alone.

For Strato his pupil, although he had a keen intellect, should
 34 be completely set apart from this school; when he abandoned the
 p.15 most necessary part of philosophy, which involves virtue and ethics, and devoted himself entirely to the investigation of nature, he disagreed with his own [school] very greatly even in this.

9 Athenaeus, *On Siege-Engines* 4.7–5.7 (p.8.18–10.9 in R. Schneider, *Griechischer Poliorketiker* 3, Abh. Göttingen N.F. 12.5 [1912]).

Those who write something or give us some advice, and think that they do this for our benefit and [so] not unreasonably, write a great deal and use up their time on unnecessary arguments, in order to display their own wide learning. For they leave behind

- p.10 μάθειαν· παρεκβάσεων γὰρ πληρώσαντες ἀπολείπουσι ⁵
 τὰ βιβλία· καὶ ταῦτα τῶν ἀρχαίων φιλοσόφων καλῶς
 εἰρηκότων τὰ τοῦ καιροῦ μέτρα δεῖν εἰδέναι ὡς ὑπάρ-
 5 χοντος ὅρου τῆς σοφίας. τουτὶ γὰρ ἂν τις <εἰς> πραγ-
 μάτων λόγον ὠφεληθεὶς ἀπέλθοι, ἐπιμελῶς ἐπιστήσας
 ἑαυτόν, ἐκ τοῦ Δελφικοῦ ἐκείνου παραγγέλματος ἢ ἐκ τῶν ¹⁰
 Στράτωνος καὶ Ἑστιαίου καὶ Ἀρχύτου καὶ Ἀριστοτέλους
 καὶ τῶν ἄλλων τῶν παραπλήσια ἐκείνοις γεγραφότων.
 νεωτέροις μὲν γὰρ φιλομαθοῦσιν οὐκ ἄχρηστα εἶη <πρὸς
 ἕξιν> τοῦ στοιχειωθῆναι· τοῖς δὲ βουλομένοις ἤδη τι
 πράττειν μακρὰν παντελῶς ἂν εἶη καὶ ἀπηρτημένα τῆς ¹⁵
 πραγματικῆς θεωρίας.

6–8 *Anaxarchus, fr.65D Dorandi (p.51)*

2 οὐκ ἀπεικότως *Schneider*: οὐκ ἂν εἰκότως *M*: οὐκ ἂν εἰ οὕτως *PV* ⁵
 παρεκβάσεως *PV* 8 σοφίας *Martin*: φιλοσοφίας *codd. Wehrli* τουτὶ *M*:
 τοῦτο *PV* εἰς *suppl. Schneider* 8–9 ἂν τις πραγμάτων λόγον *M*: ἀντὶ τῶν
 πραγμάτων *PaV*: ἀντὶ τῶν πολλῶν πραγμάτων λόγων *P^b* 9 ἀπέλθοι *Wescher*:
 ἀπέλθοιεν *codd.* 10 <μᾶλλον> ἢ *Nitsche* 11 Ἑστιαίου *Wescher*: ἐστίου *M*:
 ἐστίου *PV* 13–14 πρὸς ἕξιν *add. Schneider* 15 μακρὰν *M*: ἢ μακρὰν *PV*
 ἀπηρτημένα *cod. Lugd. Voss. 7*: ἀπηρτισμένα *MPV*

10 Polybius, *Historiae* 12.25c.1–3 (CB t.12 p.35.1–13 Pedech 1961)

- ἴσως δ' οὖν ἂν τις ἐναπορήσειε πῶς τοιοῦτος ὢν οἷον ἡμεῖς
 ὑποδείκνυμεν τοιαύτης παρ' ἐνίοις ἀποδοχῆς τέτευχε καὶ
 2 πίστεως. τοῦτου δ' ἐστὶν αἴτιον διότι πλεοναζούσης αὐτῷ
 κατὰ τὴν πραγματείαν τῆς κατὰ τῶν ἄλλων ἐπιτιμήσεως
 καὶ λοιδορίας οὐκ ἐκ τῆς αὐτοῦ θεωρεῖται πραγματείας ⁵
 οὐδ' ἐκ τῶν ιδίων ἀποφάσεων, ἀλλ' ἐκ τῆς τῶν πέλας
 κατηγορίας, πρὸς ὃ γένος καὶ πολυπραγμοσύνην δοκεῖ μοι
 3 καὶ φύσιν προσενέγκασθαι διαφέρουσιν· παραπλήσιον γὰρ
 δὴ τι τοιοῦτο συμβέβηκε καὶ Στράτωνι τῷ φυσικῷ· καὶ γὰρ
 ἐκεῖνος ὅταν ἐγχειρήσῃ τὰς τῶν ἄλλων δόξας δια- ¹⁰
 στέλλεσθαι καὶ ψευδοποιεῖν, θαυμάσιός ἐστιν· ὅταν δ'

- p.10 them books which they have filled with digressions, and they do this even though the ancient philosophers well said that one must know the measure of the appropriate time, as this is the definition
5 of wisdom.¹ For this is a benefit that someone who paid careful attention before setting off to write an account of practical matters would gain from the well-known Delphic advice² rather³ than from the [the writings] of Strato and Hestiaeus⁴ and Archytas and Aristotle and the others who have written things very like them. These things would not be without use for younger lovers of learning, in order to [bring them to] the condition of having been instructed in what is elementary; but for those who now want to achieve something practical they would be altogether remote and separated from the consideration of actual practice.

¹ Anaxarchus of Abdera, cited by Clement of Alexandria, *Stromata* 1.6.36.1 (GCS t.15 p.23,22–26 Stählin–Fruchtel–Treu 1985) = Anaxarchus, fr.65A in Dorandi 1994, 50–51, and by Stobaeus, *Ecl.* 3.34.19 (p.686.14–687.5 Hense) = Anaxarchus, fr.65B in Dorandi 1994, 51, in both cases in connection with *polumathiê*, excessive learning (Schneider 1912, 52–53; Bernays 1868, 375*–76*. Cf. Anaxarchus, fr.65E in Dorandi 1994, 52 = Cramer 1836, 215.21–25; Hesiod, *Works and Days* 694.

² Presumably the Delphic maxim “nothing in excess.”

³ Nitsche supplied “rather” in the Greek text; but the word can be understood.

⁴ Probably Hestiaeus of Tarentum (no.6 in RE), the father of Archytas (Diogenes Laertius 8.79; so Schneider 53), rather than the Platonist Hestiaeus of Perinthus.

- 10 Polybius, *Histories* 12.25c.1–3 (CB vol.12 p.35.1–13 Pedech 1961)

Perhaps someone might be puzzled how, being such as we indicate, [Timaeus the historian] is so accepted and trusted by some.

- 2 The reason for this is that, since in his work there is an abundance of reproach and abuse of others, he is considered not on the basis of his own work or of what he himself says, but on the basis of his accusation of his colleagues, to which he seems to me to have brought both an excessive eagerness and an outstanding
3 natural ability. For something very similar to this also happened to Strato the naturalist; he too, when he tries to set out and falsify¹ the opinions of others, is marvellous; but whenever he contributes something from himself and explains some one of his own

46 Strato of Lampsacus

ἐξ αὐτοῦ τι προφέρεται καὶ τι τῶν ἰδίων ἐπινοημάτων
ἐξηγῆται, παρὰ πολὺ φαίνεται τοῖς ἐπιστήμοσιν εὐηθέσ-
τερος αὐτοῦ καὶ νωθρότερος.

1 πῶς *Geel*: ποῖος *M*

- 11** Plutarch, *De tranquillitate animae* 13 472e (BT t.3 p.207.14–16
Paton-Pohlenz-Sieveking 1929)

καὶ Στράτων ὁ φυσικός, ἀκούσας ὅτι πολλαπλασίους ἔχει
Μενέδημος μαθητάς, “τί οὖν” ἔφη “θαυμαστόν, εἰ πλείονές
εἰσιν οἱ λούεσθαι τῶν ἀλείφεσθαι βουλομένων;”

1 πολλοὺς πλουσίους *LC*¹ 3 λούεσθαι θέλοντες *NA*

- 12** Photius, *Bibl.* 167 114b (CB t.2 p.155.14–19 et 156.18–20 Henry
1960)

ομοῦ τὰ κεφάλαια τοῦ τετάρτου νη΄, τῶν δὲ τεσσάρων
βιβλίων ση΄ οἷς παρατίθησιν, ὡς ἔφημεν, ὁ Ἰωάννης ἔκ τε
τῶν ἐκλογῶν καὶ τῶν ἀποφθεγμάτων καὶ τῶν ὑποθηκῶν
δόξας τε καὶ χρήσεις καὶ χρείας. ἀγείρει δὲ ταύτας ἀπὸ
μὲν φιλοσόφων, ἀπὸ τε Αἰσχίνου τοῦ Σωκρατικοῦ καὶ
p.156 Ἐναξάρχου καὶ Ἀναχάρσιδος, . . . Σωκράτους, Στίλπωνος,
Σπενσίππου, Στράτωνος, Σκυθίνου, Σφαίρου . . .

LOGICA

- 13** *Tabula inscriptionum ad opera logica spectantium*

- 1 Τόπων προοίμια] Diogenes Laertius, *Vitae* 5.59
- 2 Περὶ τοῦ συμβεβηκότος] Diogenes Laertius, *Vitae* 5.59
- 3 Περὶ τοῦ ὅρου] Diogenes Laertius, *Vitae* 5.60
- 4 Περὶ τοῦ μᾶλλον καὶ ἥττον] Diogenes Laertius, *Vitae* 5.60
- 5 Περὶ τοῦ προτέρου καὶ ὑστέρου] Diogenes Laertius, *Vitae*
5.60; Simplicius, *In Aristotelis Categorias* 418.26–27 = **15**

ideas, he seems to those who have understanding to be by a very long way more simple-minded and slow-witted than he [seemed to be before].

¹ The Greek can mean either “misrepresent” or “refute.” For possible use of Strato by Polybius see below on **54**, 38–43, 98–101.

- 11** Plutarch, *On Tranquillity of Soul* 13 472e (BT t.3 p.207.14–16 Paton-Pohlenz-Sieveking 1929)

Strato the naturalist too, when he heard that Menedemus had many times more pupils, said, “Why is it surprising if there are more who [want to] wash than who want to be anointed?”

- 12** Photius, *Library* 167 114b (CB t.2 p.155.14–19 and 156.18–20 Henry 1960)

Altogether there are 58 headings in the fourth book, and 208 in [all] four books; under these John (Stobaeus) sets out, as we have said, opinions and quotations and maxims from anthologies and [collections of] sayings and advice. He collects these from philosophers, Aeschines the Socratic and Anaxarchus and Anacharsis . . . Socrates, Stilpo, Speusippus, Strato, Scythinus, Sphaerus . . .

LOGIC

- 13** List of titles referring to works on logic

- 1 *Prologues to Topics*] Diogenes Laertius, *Lives* 5.59
- 2 *On Accident*] Diogenes Laertius, *Lives* 5.59
- 3 *On Definition*] Diogenes Laertius, *Lives* 5.60
- 4 *On the More and Less*] Diogenes Laertius, *Lives* 5.60
- 5 *On the Prior and Posterior*] Diogenes Laertius, *Lives* 5.60; Simplicius, *On Aristotle's Categories* 418.26–27 = **15** app. and

app., et 423.1–2 = **15** (utrobique Στράτων . . . ἐν τῷ Περὶ τοῦ
προτέρου καὶ ὑστέρου μονοβιβλίῳ)

6 Περὶ τοῦ προτέρου γένους] Diogenes Laertius, Vitae 5.60

7 Περὶ τοῦ ἰδίου] Diogenes Laertius, Vitae 5.60

8 Περὶ τοῦ μέλλοντος] Diogenes Laertius, Vitae 5.60

14 Plutarchus, De Stoicorum Repugnantibus 24 1045F–1046A (BT
t.6.2 p.32.6–23 Pohlenz et Westman 1959)

Ἐν τῷ τρίτῳ περὶ τῆς Διαλεκτικῆς ὑπειπὼν ὅτι “Πλάτων
ἐσπούδασε περὶ τὴν διαλεκτικὴν καὶ Ἀριστοτέλης καὶ <οἱ>
1046 ἀπὸ τούτων ἄχρι Πολέμωνος καὶ Στράτωνος, μάλιστα δὲ
Σωκράτης” καὶ ἐπιφωνήσας ὅτι “καὶ συνεξαμαρτάνειν ἂν
τις θελήσειε τούτοις τοσοῦτοις καὶ τοιοῦτοις οὓσιν”
ἐπιφέρει κατὰ λέξιν· “εἰ μὲν γὰρ ἐκ παρέργου περὶ αὐτῶν
εἰρήκεσαν, τάχ’ ἂν τις διέσυρε τὸν τόπον τοῦτον· οὕτω δ’
αὐτῶν ἐπιμελῶς εἰρηκότων ὡς ἐν ταῖς μεγίσταις δυνάμεσι
καὶ ἀναγκαιοτάταις αὐτῆς οὔσης, οὐ πιθανὸν ἐπὶ τοσοῦτον
διαμαρτάνειν αὐτοὺς ἐν τοῖς ὅλοις ὄντας οἴους ὑπονοοῦ-
μεν.”

τί οὖν σύ, φῆσαι τις ἄν, αὐτὸς ἀνδράσι τοιοῦτοις
B καὶ τοσοῦτοις οὐδέποτε παύσῃ μαχόμενος οὐδ’ ἐλέγχων,
ὡς νομίζεις, ἐν τοῖς κυριωτάτοις καὶ μεγίστοις διαμαρ-
τάνοντας; οὐ γὰρ δήπου περὶ μὲν διαλεκτικῆς ἐσπου-
δασμένως ἔγραψαν, περὶ δ’ ἀρχῆς καὶ τέλους καὶ θεῶν
καὶ δικαιοσύνης ἐκ παρέργου καὶ παίζοντες, ἐν οἷς
τυφλὸν αὐτῶν ἀποκαλεῖς τὸν λόγον καὶ μαχόμενον αὐτῷ
καὶ μυρίας ἄλλας ἀμαρτίας ἔχοντα.

1–11 SVF 2.126 12–19 SVF 2.31

2 οἱ add. Wilamowitz (post τούτων add. Bachet de Meziriac) 15 μὲν gF: om.
O (περὶ δὲ ἀλεκτικῆς a et fort. A¹)

15 Simplicius, In Aristotelis Categorias 12 14a26–b24 (CAG t.8
p.422.21–423.33 Kalbfleisch 1907)

οὕτως μὲν οὖν ἐκεῖ τοὺς τοῦ προτέρου καὶ ὑστέρου

423.1–2 = **15** (“Strato . . . in his monograph *On the Prior and Posterior*” in both passages)

6 *On the Prior Genus*] Diogenes Laertius, *Lives* 5.60

7 *On Propert[ies]*] Diogenes Laertius, *Lives* 5.60

8 *On the Future*] Diogenes Laertius, *Lives* 5.60

14 Plutarch, *On Stoic Self-Contradictions* 24 1045F–1046A (*BT* vol. 6.2 p.32.6–23 Pohlenz and Westman 1959)

In the third book on *Dialectic* [Chrysippus] says “Plato was serious about dialectic, and [so was] Aristotle, and their successors
1046 up to Polemo and Strato, and Socrates above all,” and after adding “someone might even want to be in error [if it were] shared with so many in number and such [thinkers],” he adds, in these exact words, “if they had spoken about these matters incidentally, perhaps someone might disparage this topic; but as they have stated so carefully that it is one of the greatest and most necessary capacities, it is not credible that they have gone astray to such an extent, seeing that in general they are the sort of people we suppose them to be.”

Why then, someone might say, do you [Chrysippus] yourself never stop fighting with men who are so great and so numerous
B and convicting them, as you think, of error in the most essential and important matters? For they did not, I suppose, write in seriousness about dialectic, but only incidentally and playfully about principles and ends and gods and justice, matters on which you call their reasoning blind and self-contradictory and full of countless other errors.

15 Simplicius, *On Aristotle's Categories* 12 14a26–b24 (*CAG* vol.8 p.422.21–423.33 Kalbfleisch 1907)

So that is how [Aristotle] there¹ enumerated the modes of prior

τρόπους ἀπριθμήσατο, καὶ δῆλον ὅτι περιέχονται ἐν τούτοις οἱ ἐν ταῖς Κατηγορίαις εἰρημένοι, ὁ μὲν κατὰ χρόνον καὶ ὁ κατὰ τάξιν καὶ ὁ κατὰ δύναμιν ἐν τῷ πρώτῳ, τὰ δὲ κατὰ φύσιν καὶ αἰτίαν ἐν τῷ ἔσχάτῳ.

5

Οἱ μέντοι πέντε τρόποι οἱ ἐν ταῖς Κατηγορίαις ἀναχθήσονται εἰς τὰ ἀνωτάτω γένη οὕτως· ὁ μὲν κατὰ χρόνον εἰς τὴν ποτὲ κατηγορίαν, ὁ δὲ κατὰ φύσιν καὶ τὸ συναναιρεῖν μὲν μὴ συναναιρεῖσθαι δὲ καὶ ὁ κατὰ δύναμιν καὶ ὁ κατὰ αἰτίαν ὑπὸ τὰ πρὸς τι, ὁ δὲ κατὰ τάξιν ὑπὸ τὸ

10

κεῖσθαι. δῆλον δὲ ὅτι καὶ τὸ ὕστερον ἐν ταῖς αὐταῖς ἔσται κατηγορίαις, ἐν αἷς καὶ τὸ πρότερον.

p.423 Καὶ Στράτων δὲ ὁ Λαμψακηνὸς ἐν τῷ Περί τοῦ προτέρου καὶ ὕστερου μονοβιβλίῳ πολλοὺς ἀπριθμήσατο τρόπους, οὓς νομίζω δυνατόν εἶναι ὑπὸ τοὺς πέντε τοὺς

15

ἐνταῦθα λεγομένους ἀναγαγεῖν οἷον μερισμὸν ἐκείνων ὄντας. ὑπὸ μὲν γὰρ τὸ τῷ χρόνῳ πρότερον ταχθήσεται τὸ ἀτελὲς τοῦ τελείου λεγόμενον, διότι ἔσχατον ἐν πᾶσι τὸ τέλος· τὸ δὲ αὐτὸ καὶ ὑπὸ τὴν τάξιν. ἔτι δὲ ὑπ' ἄμφω ταῦτα καὶ ὑπὸ <τὸ> τῇ ἀξίᾳ καὶ δυνάμει καὶ τῇ φύσει πρότερόν

20

ἔστιν, οὗ ἐπιστήμη πρότερον, οἷον μονάδος ἢ δυάδος καὶ πλήθους ἢ ἀρτίου καὶ περιττοῦ· ταῦτα γὰρ οὐδὲ ἀντιστρέφει κατὰ τὴν τοῦ εἶναι ἀκολουθήσιν, ὥσπερ οὐδὲ ἡ ἐπιστήμη αὐτῶν.

πρῶτον δὲ καὶ τῷ χρόνῳ καὶ τῇ ἀξίᾳ, ὧν τὸ ἔργον

25

πρότερον, οἷον τὸ ἀγαθὸν τοῦ κακοῦ· τὸ μὲν γὰρ σωτηρίας,

1 ἐκεῖ] *Aristoteles, Metaphysica* Δ 11 (*cuius paraphrasim dedit Simplicius p.421.31–422.20*) 13–15 *Simplicius, In Arist. Cat. 12 14a26–b24 (CAG t.8 418.24–27 Kalbfleisch)* = *Scholia in Aristotelem* 89a37–42 *Brandis, Stratone nominato*

4 ὁ (*pr.*) *om.* *J^p* καὶ (*alt.*) *om.* *LA* 6 οἱ (*alt.*) *om.* *J^pA* 8 τὴν τοῦ ποτὲ *J^pA* κατὰ τὴν φύσιν *J^pL* 8–9 τὸ συναναιρεῖν μὲν μὴ συναναιρεῖσθαι] ὁ μὴ συναναιρούμενος συναναιρῶν *J^p* 10 τὸ πρὸς τι *J^p* 11 καὶ *om.* *J^p* 12 *supra* καὶ *add.* πρὸς *L¹* 14 μονοβιβλίῳ *Kv* 15 οὐ νομίζων *J^p* 17 τὸ (*pr.*) *om.* *J^p* 20 ὑπὸ <τὸ> *Kalbfleisch*: ὑπὸ *J^pLA*: ὁ *Kv* 21 οὐ] *lac.* 3 *litt.* *A* πρότερον *om.* *J^p* 26 τοῦ ἀγαθοῦ τὸ κακόν *J^p* τὸ μὲν γὰρ *Kv*: οἷον τὸ μὲν *J^pLA*

and posterior, and it is clear that those mentioned in the *Categories* are included in these: [priority] [1] in time and [2] in order and [3] in potentiality in the first[-mentioned],² those [4] in nature and [5] in explanation in the last[-mentioned].³

However, the five modes in the *Categories* will be referred to the highest genera in the following way: that [1] in time to the category of “when”; that [4] in nature [which involves] removing [something] along with itself but not being removed along with it, that [3] in potentiality and that [5] in explanation [will fall] under [the category] of relations; that [2] in order under [the category of] being situated. And it is clear that the posterior too will be in the same categories as the prior.

p.423 Strato of Lampsacus too, in his monograph *On the Prior and Posterior* enumerates many modes [of prior and posterior], which can I think be placed under the five mentioned here, as a subdivision of them.⁴ For [a] the incomplete thing [said to be] prior to the complete will be placed under [1] what is prior in time, since in all things completion comes last; and the same also under [2] [priority in] order. Moreover under both of these ([1], [2]), and also under [4] what is prior in worth and power and nature, is [b] that of which the knowledge is prior, for example that of the monad to that of the dyad and that of number to that of even and odd. For these do not reciprocally imply each other’s being, and neither is this the case with the knowledge of them.⁵

Prior both [1] in time and [4] in worth are [c] those things whose function is prior: for example good [is prior] to evil. For

¹ In *Metaphysics* Δ 11 1018b9–1019a4, of which Simplicius has just given a paraphrase.

² The first-mentioned mode of priority in the *Metaphysics* is the priority of that which is nearer the origin (1018b9–1019a1, paraphrased by Simplicius at p.421.31–422.13): Gaskin 2000, 239 n.980.

³ The priority of that which can exist without something else while that thing cannot exist without it (1019a1–4, Simplicius, *In Cat.* 422.18–20; Gaskin 2000, 239 n.982). But Simplicius’ list [1]–[5] does not correspond to the actual list of five modes in the *Categories*, which has (i) time, (ii) that which can exist without something else (described as priority in order), (iii) priority in order more generally, (iv) what is better (~ nature here), (v) explanation.

⁴ How closely what follows represents the contents of Strato’s discussion is uncertain. I have indicated by letters the distinct, apparently Stratonian modes which Simplicius is placing under the numbered Aristotelian ones.

⁵ One needs to know what number is if one is to know what even and odd are, but not vice versa.

τὸ δὲ φθορᾶς αἴτιον, πρῶτον δὲ τὸ εἶναι τοῦ φθείρεσθαι καὶ
 χρόνῳ καὶ ἀξίᾳ. πρῶτον δὲ τῇ φύσει ὡς μὴ ἀντιστρέφον
 κατὰ τὴν τοῦ εἶναι ἀκολουθήσιν, ὅπερ δυνατόν εἶναι
 θατέρου μὴ ὄντος, ὡς τόπος σώματος καὶ σῶμα χρώματος, 30
 ὁμοίως δὲ καὶ εἰ θάτερον ἐν θατέρῳ πέφυκε γίνεσθαι, οἷον
 ἢ οὐσία ποιοῦ καὶ ποσοῦ· οὕτως δὲ καὶ τὸ κατὰ φύσιν
 πρότερον τοῦ παρὰ φύσιν καὶ ὁ νόμος τῆς παρανομίας καὶ
 ἢ ἕξις τῆς στερήσεως.

ὑπὸ δὲ τὸ τῇ ἀξίᾳ πρότερον καὶ τὸ δυνάμει τάττοιο ἂν 35
 τὰ τῷ τιμιωτέρῳ συγγενέστερα, ὡς τὸ ποσὸν τοῦ ποιοῦ
 προτάττοιο ἂν, διότι τὸ μὲν ποσὸν μέρος τῆς οὐσίας, τὸ δὲ
 ποιὸν οὐ· καὶ εἰ τὸ μὲν μετέχει γενέσεως καὶ φθορᾶς, ὡς ὁ
 χρόνος, τὸ δὲ οὐ, ὡς ὁ τόπος, καὶ τὸ μὲν χωριστόν, τὸ δὲ
 οὐ· ἄνευ μὲν γὰρ αἰσθήσεως εἶναι τὴν ψυχὴν ἀδύνατον, 40
 ἄνευ δὲ ἐπιθυμίας εἶναι δυνατόν· καὶ τὸ ἀμερὲς τοῦ
 μεριστοῦ· ἀρχῇ γὰρ ὁμοιότερον, ὥστε καὶ κύκλου τὸ
 κέντρον· καὶ τὸ μᾶλλον τοῦ προτέρου μετέχον, ὡς τὸ
 αἰδίδιον μὲν τοῦ ἀγαθοῦ, τὸ φθαρτὸν δὲ τοῦ κακοῦ καὶ τὸ
 ἄρτιον δυάδος, τὸ δὲ περιττὸν τριάδος· καὶ εἰ τὸ μὲν μένει 45
 χρόνον τινά, τὸ δὲ οὐ μένει, οἷον σῶμα κινήσεως καὶ
 χρόνου.

ὑπὸ δὲ τὸ τῇ τάξει πρότερον εἴη ἂν τὸ τοῦ μεταξὺ
 πρότερον, ὕστερον δὲ τὸ τοῦ μεταξὺ ὕστερον. ὑπὸ δὲ <τὸ
 ἐν> τοῖς ἀντιστρέφουσιν ὡς αἰτιῶδες πρότερον ἂν εἴη τὸ 50
 στοιχεῖον· καὶ γὰρ αὐτὸ καὶ τὸ μέρος τοῦ ὅλου, ὡς τὸ
 πεπερασμένον τοῦ ἀπείρου, καὶ εἰ θάτερον ἐκ θατέρου,
 οἷον ὁ χαλκὸς τοῦ ἀνδριάντος· ὑλικὸν γὰρ καὶ οὗτος
 αἴτιον. ὅτι δὲ καὶ <τὸ> αὐτὸ κατ' ἄλλο καὶ ἄλλο καὶ
 πρότερον καὶ ὕστερον εἶναι δυνατόν, καὶ αὐτὸς ὁ Στράτων 55
 ἐνεδείξατο, τὸν χρόνον καὶ τὸν τόπον πρότερα καὶ ὕστερα
 ἀλλήλων δεικνύς.

28 ὡς τὸ μὴ *J^p* 29 εἶναι (*alt.*) *om. A* 33 ὁ *om. J^pA* 35 τὸ (*pr.*) *om. J^p* τὸ
 (*alt.*)] τῇ *J^pA* 35–36 ἂν τὰ] αὐτὰ *J^pA* 36 τῷ *om. Ab* 38 οὐ] οὐσία *A* εἰ
om. J^p 42 ἀρχῇ *LA* 44 τὸ δὲ φθαρτὸν *J^p* δὲ *om. A* 48 τὸ (*pr.*) *L: om. cett.*
 τὴν τάξιν *J^p* πότερον *K* 49 τὸ *add. Brandis* 50 ἐν *add. Kalbfleisch* εἴη]
 μὴ *J^pA* 51 καὶ γὰρ αὐ] γὰρ καὶ αὐτὴ *J^pA* 54 δὲ *om. J^pA* τὸ *add. Brandis*
 55 εἶναι] καὶ *J^p*

the former is the cause of preservation, the latter of destruction, and being is prior both in time and in worth to being destroyed. Prior [4] in nature, as not reciprocally implying being, is [d] that which can be when the other is not, as place [is prior to] body and body to colour,⁶ and similarly if one thing naturally comes to be in the other, as substance [is prior to] quality and quantity. In this way too what is natural [is prior] to what is unnatural, law to lawlessness, possession to privation.

Under [4] what is prior in worth and power would be ranked [e] the things which are more akin to what is more honourable, as quantity would be ranked before quality, because quantity is a part of substance and quality is not. Also if one thing shares in coming to be and passing away, like time, and the other does not, like place; and if one can be separated, the other not. For the soul cannot exist without sensation, but it can exist without desire. And what is without parts [is prior] to what can be divided into parts; for it is more like a starting point. So the centre [is prior] to the circle. And what has a greater share in what is prior [is itself prior], as the eternal [has a greater share] in good, the perishable in evil, the even in twoness and the odd in threeness. And if one thing remains for a certain time and the other does not, as body [is prior] to motion and time.

Under [2] what is prior in order will be [f] that which is prior to that which is intermediate, and posterior will be that which is posterior to that which is intermediate. The element will be under [5] what is prior in the manner of an explanation among things that reciprocate. Moreover the part [will be prior] to the whole, as the limited [is] to the unlimited. And if one thing [comes] from the other, as the bronze [is prior] to the statue; for this too is a material cause. That the same thing can be both prior and posterior in different respects Strato himself too indicated, showing that time and place are both prior and posterior to each other.

⁶ That is, place can exist without body, and body without colour.

16 Alexander Aphrodisiensis, In Aristotelis Topica 4.4 125a5–14 (CAG t.2.2 p.339.30–340.17 Wallies 1891)

ὅταν οὖν μὴ ὁμοίως ἔχη τὰ ἀντιστρέφοντα, ἀναιρεθήσεται
τὸ τεθὲν ὡς γένος. ἂν γάρ τις θῇ τοῦ μείζονος γένος τὸ
p.340 ὑπερέχον, ἐπεὶ τὰ ἀντιστρέφοντα αὐτοῖς οὐ πρὸς ὁμοίας
λέγεται πτώσεις (τὸ μὲν γὰρ ἔλαττον τινός, μείζονος γάρ,
τὸ δὲ ὑπερεχόμενον τινί, ὑπερέχοντι γάρ), ἀναιροῖτ' ἂν τὸ 5
εἶναι τὸ ὑπερέχον γένος τοῦ μείζονος.

ὁ μὲντοι Στράτων προστίθησιν τινα τῷ τόπῳ τούτῳ καὶ
ἄλλον· εἰ αὐτὰ μὲν πρὸς ὁμοίας πτώσεις λέγοιτο, τό τε
ἀποδοθὲν γένος καὶ τὸ εἶδος, τῶν δὲ πρὸς ἃ ταῦτα λέγεται
τὸ μὲν ἀντιστρέφει τὸ δὲ μὴ, οὐ φησι τὸ τεθὲν ἔσσεσθαι 10
γένος. καὶ παραδείγματι χρῆται τοῦ τόπου τῇ τε ἑλλείψει
καὶ τῇ ἔνδειᾳ· εἰ γάρ τις γένος τῆς ἑλλείψεως τὴν ἔνδειαν
λέγει, ἐπεὶ ἐκάτερον μὲν αὐτῶν πρὸς τὴν αὐτὴν ἀποδίδεται
πτώσιν (ἢ τε γὰρ ἑλλειψις τινός, τῆς ὑπεροχῆς γάρ, καὶ ἡ
ἔνδεια ὁμοίως τινός, τοῦ γὰρ ἱκανοῦ), οὐκέτι δὲ ἀμφοτέρω, 15
πρὸς ἃ ἐκάτερον αὐτῶν λέγεται, ἀντιστρέφει (ἢ μὲν γὰρ
ὑπεροχὴ καὶ αὐτὴ τινός, ἑλλείψεως γάρ· τὸ δὲ ἱκανὸν
οὐκέτι ἀντιστρέφει· οὐ γὰρ λέγεται τὸ ἱκανὸν ἔνδειας
ἱκανόν), ὥστε οὐκ ἂν εἴη ἡ ἔνδεια τῆς ἑλλείψεως γένος.

ἀλλ' οὗτος μὲν καινοτομήσαι βουληθεὶς ὀλίγον ἀναιρεῖ 20
μειζόν τι· τὸ γὰρ πάντα <τὰ> πρὸς τι πρὸς ἀντιστρέφοντα
λέγεσθαι κινεῖ. αἴτιον δὲ αὐτῷ τῆς πλάνης τὸ μὴ δεόντως
λαβεῖν τὴν ἔνδειαν πρὸς τὸ ἱκανὸν λέγεσθαι· καὶ γὰρ ἡ
ἔνδεια ἐνδέοντός ἐστιν ἔνδεια καὶ πρὸς τοῦτο λέγεται πρὸς
τι.

2 τεθὲν ὡς *aAB*: ῥηθὲν ὡς *D*: ἀναιρεθὲν *P* 4 *post* μείζονος γάρ *add.* τὸ δὲ
ὑπερέχον τινός, ἡττονος (ἐλάττονος *A*) γὰρ *aABP*: *om.* *D* 6 τὸ] ὅτι *A* 10
ἀντιστρέφει *Wallies*: ἀντιστρέφει *aBDP*: ἀντιστρέφων *A* 11 παραδείγματι]
παραδείγμασι δὲ *aBP* 13 λέγει] λέγοι *B* αὐτὴν] αὐτοῦ *A* 14 ὑπεροχῆς
γάρ] γὰρ ὑπεροχῆς *A*: γὰρ ὑποδοχῆς *P*: γὰρ ὑπεροδοχῆς *a* 17 αὐτὴ] αὕτη
D 18 τὸ *om.* *P* 18–19 ἔνδειας ἱκανόν τὸ ἱκανόν *D* 19 ἢ *om.* *aDP* τὸ
γένος *D* 20 μὲν *D*: γε *aAP*: *om.* *B* καινοτομήσαι τι *aBP* 21 <τὰ> πρὸς τι
πρὸς *Wallies*: πρὸς *AD*: πρὸς τὸ (τι *B*) γένος *aBP* 22 αἴτια *sic* *A* 23 ἢ *D*:
om. *aABP* 24 ἐνδέοντός *D*: δέοντός *aABP*

Cf. etiam **60** (Sextus, Adv. Math. 8.12)

- 16 Alexander of Aphrodisias, *On Aristotle's Topics* 4.4 125a5–14 (CAG vol.2.2 p.339.30–340.17 Wallies 1891)

p.340 So when the reciprocals are not similar, what has been posited as genus will be eliminated. For if someone proposes “what exceeds” as the genus [which includes] “what is greater,” [then], since their reciprocals are not spoken of in relation to similar grammatical cases (for that [which is lesser] is lesser *than* something, for [it is lesser] *than* what is greater, while [what is exceeded] is exceeded *by* something, for [it is exceeded] *by* what exceeds it), the [claim], that what exceeds is the genus [which includes] what is greater, will be eliminated.

Strato, however, adds another *topos* too to this one. Suppose the genus and species that have been given are themselves spoken of in relation to similar grammatical cases, but one of the things, with relation to which these are spoken of, reciprocates and the other does not. [Then] he says that what has been posited will not be the genus. As an example of the *topos* he uses “falling short” and “lack.” Suppose that someone says that lack is the genus [which includes] falling short. Each of them is spoken of in relation to the same case: for [falling short is] falling short *of* something, for [it is falling short] *of* what surpasses [it], and similarly [lack is] lack *of* something, for [it is lack] *of* what is sufficient. But it is not also the case that both the things, with reference to which each of them is spoken of, reciprocate: for surpassing is itself [surpassing] *of* something, for [it is surpassing] *of* what falls short, but what is sufficient does not also reciprocate. For what is sufficient is not said to be sufficient *of* lack. So lack will not be the genus [which includes] falling short.

However, [Strato], wanting to make an innovation in a small matter, destroys something more important. For he disturbs the [rule] that all relatives are spoken of in relation to reciprocals. The reason for his error is that he takes lack to be spoken of in relation to what is sufficient, [though he] does not need to. For lack is lack *of* what is lacking, and is spoken of as relative in relation to this.¹

¹ Alexander's objection is hardly successful. For “what is lacking” is no more “of lack” than “sufficient” is.

See also 60 (Sextus, *Against the Professors* 8.12)

PHYSICA

17 Tabula inscriptionum ad opera theologica, metaphysica, physica spectantium

- 1 Περὶ θεῶν γ'] Diogenes Laertius, Vitae 5.59
- 2 Περὶ ἀρχῶν γ', ἢ β'] Diogenes Laertius, Vitae 5.59
- 3 Περὶ τοῦ κενοῦ] Diogenes Laertius, Vitae 5.59
- 4 Περὶ τοῦ οὐρανοῦ] Diogenes Laertius, Vitae 5.59
- 5 Περὶ μίξεως] Diogenes Laertius, Vitae 5.59 (nisi ad coitum referenda est, cf. **55**)
- 6 Περὶ δυνάμεων] Diogenes Laertius, Vitae 5.59 (nisi ad potentias medicinales referenda est, cf. **55**)
- 7 Περὶ τῶν μεταλλικῶν] Diogenes Laertius, Vitae 5.59
- 8 Μηχανικόν] Diogenes Laertius, Vitae 5.59 (hoc titulum cum praecedente iugendum ac Περὶ τῶν μεταλλικῶν μηχανημάτων legendum censuit Stephanus)
- 9 Περὶ κούφου καὶ βαρέος] Diogenes Laertius, Vitae 5.59
- 10 Περὶ χρόνου] Diogenes Laertius, Vitae 5.59
- 11 Περὶ αἰτιῶν] Diogenes Laertius, Vitae 5.59
- 12 Περὶ τοῦ ὄντος] Proclus, In Platonis Timaeum 37D (t.3 p.16.3 Diehl) = **25** (ἐν τῷ Περὶ τοῦ ὄντος βιβλίῳ)
- 13 Περὶ κινήσεως] Simplicius, In Aristotelis Physica 5.6 230b21–28 (CAG t.10 p.916.13 Diels) = **40** (ἐν τῷ Περὶ κινήσεως); Simplicius, In Aristotelis Physica 6.4 234b10–20 (CAG t.10 p.965.10 Diels) = **41** (ἐν τῷ Περὶ κινήσεως *AFa*, ἐν τοῖς Περὶ κινήσεως *CM*)

PHYSICS

17 List of titles referring to works on theology, metaphysics, physics

- 1 *On the Gods*, three (books)] Diogenes Laertius, *Lives* 5.59
- 2 *On Principles*, three or two (books)] Diogenes Laertius, *Lives* 5.59
- 3 *On the Void*] Diogenes Laertius, *Lives* 5.59
- 4 *On the Heaven*] Diogenes Laertius, *Lives* 5.59
- 5 *On Mixture*] Diogenes Laertius, *Lives* 5.59 (unless this title should be understood as referring to sexual intercourse: see **55**)
- 6 *On Powers*] Diogenes Laertius, *Lives* 5.59 (unless this title should be understood as referring to powers in a medical sense: see **55**)
- 7 *On Things Mined*] Diogenes Laertius, *Lives* 5.59
- 8 *Mechanics*] Diogenes Laertius, *Lives* 5.59 (Stephanus combined this and the preceding title into one and read *On Mining Machinery*)
- 9 *On Light and Heavy*] Diogenes Laertius, *Lives* 5.59
- 10 *On Time*] Diogenes Laertius, *Lives* 5.59
- 11 *On Causes*] Diogenes Laertius, *Lives* 5.59
- 12 *On Being*] Proclus, *On Plato's Timaeus* 37D (vol.3 p.16.3 Diehl) = **25** ("in his book *On Being*")
- 13 *On Motion* (or *On Change*)] Simplicius, *On Aristotle's Physics* 5.6 230b21–28 (CAG vol.10 p.916.13 Diels) = **40** ("in the [book] *On Motion*"); Simplicius, *On Aristotle's Physics* 6.4 234b10–20 (CAG vol.10 p.965.10 Diels) = **41** ("in the [book] *On Motion*" MSS AFa, "in the [books] *On Motion*" MSS CM)

Theologia

- 18** Cicero, *Academica* (Lucullus) 2.121 (BT 87.21–88.14 Plasberg 1922)

Negas sine deo posse quicquam: ecce tibi e transverso
 Lampsacenus Strato, qui det isti deo inmunitatem magni
 quidem muneris; sed cum sacerdotes deorum vacationem
 p.88 habeant, quanto est aequius habere ipsos deos. negat opera
 deorum se uti ad fabricandum mundum, quaecumque sint 5
 docet omnia effecta esse natura, nec ut ille qui asperis et
 levibus et hamatis uncinatisque corporibus concreta haec
 esse dicat interiecto inani: somnia censet haec esse
 Democriti non docentis sed optantis, ipse autem singulas
 mundi partes persequens quidquid aut sit aut fiat nat- 10
 uralibus fieri aut factum esse docet ponderibus et
 motibus. ne ille et deum opere magno liberat et me timore.
 quis enim potest, cum existimet curari se a deo, non et dies
 et noctes divinum numen horrere et si quid adversi
 acciderit, quod cui non accidit, extimescere ne id iure 15
 evenerit? nec Stratoni tamen adsentior nec vero tibi; modo
 hoc modo illud probabilius videtur.

1–12 *Democritus*, 68A80 DK

6 qui <ex> Reid 15 acciderit A': accedit B'

- 19A** Cicero, *De Natura Deorum* 1.35 (BT p.15.6–12 Plasberg et Ax 1933)

Nec vero Theophrasti inconstantia ferenda est; modo enim
 menti divinum tribuit principatum modo caelo, tum autem
 signis sideribusque caelestibus. Nec audiendus eius auditor
 Strato is qui physicus appellatur, qui omnem vim divinam
 in natura sitam esse censet, quae causas gignendi augendi 5
 minuendi habeat sed careat omni et sensu et figura.

1–3 *Theophrastus*, fr.252A FHS&G 3–6 Cf. etiam quae de Stratone dicit Philodemus, *De pietate* (t.12 Obbink etiamnunc sub pretis)

2 divinae codd. dett. et cf.20B.8 6 et (pr.) om. ACPN

Theology

- 18** Cicero, *Academica* (*Lucullus*) 2.121 (BT 87.21–88.14 Plasberg 1922)

You [Stoics] say that nothing can [come to be] without god; look, here unexpectedly is Strato of Lampsacus, who gives this god a release from a great task, indeed; but seeing that the priests of the gods have a holiday, how much fairer is it that the gods themselves [should do so]. He says that he makes no use of work by the gods in constructing the world, and teaches that whatever there is is all brought about by nature, and not in the same way as he who says that all these things are composed of rough and smooth and hooked and barbed bodies interspersed with void; he says that these are the dreams of Democritus, who does not teach but [indulges in] wishful [thinking], while he himself, investigating the individual parts of the world, teaches that whatever is or comes to be is brought about or has been brought about by natural weights and movements. To be sure, he both sets god free from great toil and sets me free from great fear. For who, thinking that he is of concern to god, can fail to shudder at the divine power both by day and by night, and, if something bad has happened (to whom does it not?), can fail to be terrified that it happened justly? However, I do not agree either with Strato or with you; now this [view] seems more worthy of approval, now that.

- 19A** Cicero, *On the Nature of the Gods* 1.35 (BT p.15.6–12 Plasberg et Ax 1933)

Nor is Theophrastus' inconsistency tolerable; at one moment he gives the divine supremacy to mind,¹ at another to the heaven, and then again to the constellations and stars in the sky. Nor should we listen to his pupil Strato, the one who is called "the naturalist," who holds the view that all divine power is located in nature, which is responsible for generation, growth and decay, but is without any consciousness and without any shape.²

¹ Inferior MSS have "supremacy to the divine mind": cf. **19B**.

² Cf. also Philodemus' report of Strato in *On Piety* (vol.2 Obbink, in press)

19B Minucius Felix, Octavius 19.8 (p.17.2–10 Kytzler 1982)

Quid? Democritus, quamvis atomorum primus inventor, nonne plerumque naturam quae imagines fundat et intellegentiam deum loquitur? Straton quoque et ipse naturam. Etiam Epicurus ille, qui deos aut otiosos fingit aut nullos, naturam superponit. Aristoteles variat et adsignat tamen unam potestatem: nam interim mentem, mundum interim deum dicit, interim mundo deum praeficit. Theophrastus etiam variat, alias mundo, alias menti divinae tribuens principatum, Heraclides Ponticus quoque mundo divinam mentem quamvis varie adscribit.

5 adsignat *P*: designat *Vahlen* 8 Theophrastus etiam *Vahlen*: Theophrastus et *Roeren*: aristoles (Aristoteles *r*) ponticus *P*: Heraclides Ponticus *Van Winden* 1954 8 divinum *Beaujeu* qui **19A.2** confert 9 Heraclides Ponticus *P*: Theophrastus *Van Winden* loc. cit. mundo *Sauppe*: de deo *P*: ei *Schoene*: eidem *Baehrens*

19C Lactantius, De ira dei 10.1 (SC p.124.1–9 Ingremeau 1982)

qui nolunt divina providentia factum esse mundum, aut principiis inter se temere coeuntibus dicunt esse concretum aut repente natura extitisse; naturam vero, ut Straton ait, habere in se vim gignendi et minuendi, sed eam nec sensum habere ullum nec figuram, ut intellegamus omnia quasi sua sponte esse generata, nullo artifice nec auctore. utrumque vanum et impossibile.

3 natura] naturam *B*²

19B Minucius Felix, *Octavius* 19.8 (BT p.17.2–10 Kytzler 1982)

What? Does not Democritus, although he was the first to discover the atoms, for the most part call “god” the nature which sends forth images, and intelligence?¹ Strato himself too [calls] nature [god]. Even the famous Epicurus, who makes gods who are either idle or non-existent, gives nature priority. Aristotle wavers, but assigns a single power [to different beings]; for sometimes he says that mind is god, sometimes that the world is god, [and] sometimes he puts god in charge of the world. Theophrastus too wavers, sometimes giving supremacy to the world and sometimes to the divine mind. Heraclides of Pontus, too, attributes the divine mind to the world, though in different ways [in different places].

¹ The Latin is ambiguous between “both the nature which sends forth images, and intelligence” and “the nature which sends forth both images and intelligence.”

19C Lactantius, *On the Wrath of God* 10.1 (SC p.124.1–9 Ingreteau 1982)

Those who do not want the world to have been created by divine providence say either that it was composed of first-principles that came together at random or that it was brought into existence by nature¹ in an unlooked-for way; [they suppose that] nature indeed, as Strato says, has in itself a power of producing generation, growth and decay, but it has no consciousness or shape, so that we may understand that all things have as it were been produced spontaneously, not by any craftsman or originator. Both of these [positions] are idle and impossible.

¹ B² corrects to “or that nature came into existence.”

20 Plutarchus, *Adversus Colotem* 14 1114F–1115B (BT t.6.2 p.189.7–26 Pohlenz et Westman 1959)

καὶ πρῶτόν γε τὴν ἐπιμέλειαν καὶ πολυμάθειαν τοῦ
 1115 φιλοσόφου σκεψώμεθα, λέγοντος ὅτι τούτοις τοῖς δόγμασι
 τοῦ Πλάτωνος ἐπηκολουθήκασιν Ἀριστοτέλης καὶ
 Ξενοκράτης καὶ Θεόφραστος καὶ πάντες οἱ Περιπατητικοί.
 ποῦ γὰρ ὢν τῆς αἰκίτου τὸ βιβλίον ἔγραφες, ἵνα ταῦτα 5
 συντιθεὶς τὰ ἐγκλήματα μὴ τοῖς ἐκείνων συντάγμασιν
 ἐντύχης μηδ' ἀναλάβῃς εἰς χεῖρας Ἀριστοτέλους τὰ Περὶ
 οὐρανοῦ καὶ τὰ Περὶ ψυχῆς, Θεοφράστου δὲ τὰ Πρὸς τοὺς
 φυσικοὺς, Ἡρακλείδου δὲ τὸν Ζωροάστρην, τὸ Περὶ τῶν 10
 ἐν Ἄιδου, τὸ Περὶ τῶν φυσικῶς ἀπορουμένων, Δικαιάρχου
 δὲ τὰ Περὶ ψυχῆς, ἐν οἷς πρὸς τὰ κυριώτατα καὶ μέγιστα
 B τῶν φυσικῶν ὑπεναντιούμενοι τῷ Πλάτῳ καὶ μαχόμενοι
 διατελοῦσι; καὶ μὴν τῶν ἄλλων Περιπατητικῶν ὁ
 κορυφαίωτος Στράτων οὗτ' Ἀριστοτέλει κατὰ πολλὰ
 συμφέρεται καὶ Πλάτῳ τὰς ἐναντίας ἔσχηκε δόξας περὶ 15
 κινήσεως, περὶ νοῦ καὶ περὶ ψυχῆς καὶ περὶ γενέσεως,
 τελευτῶν <τε> τὸν κόσμον αὐτὸν οὐ ζῶν εἶναι φησι, τὸ δὲ
 κατὰ φύσιν ἔπεσθαι τῷ κατὰ τύχην· ἀρχὴν γὰρ ἐνδιδόναι
 τὸ αὐτόματον, εἴθ' οὕτως περαίνεσθαι τῶν φυσικῶν παθῶν
 ἕκαστον. 20

1–13 *Theophrastus*, fr.245 FHS&G; *Dicaearchus*, fr.13 *Mirhady* (7–11 *Dicaearchus*, fr.5 *Wehrli*) 5–13 *Heraclides Ponticus*, fr.79 *SPSV* (fr.68 et 71 *Wehrli*)

3 τοῦ *om.* B 9 Ἡρακλείδου *Reiske*: Ἡρακλείτου *EB* 12 μαχοῦμενοι B
 16 <καὶ> περὶ νοῦ *Croenert* καὶ περὶ γενέσεως *post* περὶ κινήσεως (15–16)
transponendum coniecerunt Pohlenz et Westman 17 τε *add.* *Pohlenz*: δὲ *add.*
Wytttenbach: <καὶ> τελευτῶν *Reiske*

21 Maximus Tyrius, *Philosophumena* 11.5 (BT p.91.90–92.102 Trapp 1994)

εἰ δ' ἐξεγένοντο ἐν τῷ ξύμπαντι αἰῶνι δύο που καὶ τρεῖς,
 ἄθεον καὶ ταπεινὸν καὶ ἀναισθὲς γένος, καὶ πεπλανημένον
 μὲν τοῖς ὀφθαλμοῖς, ἐξηπατημένον δὲ ταῖς ἀκοαῖς,
 ἐκτετμημένον δὲ τὴν ψυχὴν, ἄλογον καὶ ἄγονον καὶ
 ἄκαρπον, ὡς ἄθυμος λέων, ὡς βοῦς ἄκερος, ὡς ὄρνις 5
 ἄπτερος, καὶ παρὰ τούτου ὅμως τοῦ γένους πεύσει τὸ
 θεῖον· ἴσασιν γὰρ οὐχ ἐκόντες, καὶ λέγουσιν ἄκοντες, κἂν

- 20** Plutarch, *Against Colotes* 14 1114F–1115B (BT vol.6.2 p.189.7–26 Pohlenz et Westman 1959)

1115 First let us consider the philosopher [Colotes]’s carefulness and wide learning, when he says that the doctrines of Plato were followed by Aristotle and Xenocrates and Theophrastus and all the Peripatetics. Where outside the inhabited world were you when you were writing the book, so that in putting together these complaints you did not come across those men’s treatises and did not take up in your hands Aristotle’s *On Heaven* and *On the Soul*, Theophrastus’ *Against the Natural Philosophers*, Heraclides’ *Zoroaster*, *About the things in Hades*, and *About Problems concerning Nature*, and Dicaearchus’ *On the Soul*, in which they constantly
B oppose and fight with Plato in relation to the greatest and most important of things concerning nature? Indeed the leader of the rest of the Peripatetics, Strato, in many things disagrees with Aristotle, and holds opposite opinions to Plato concerning motion, mind, soul and generation, and finally he says that the world itself is not a living creature and that what is natural follows from what is according to chance. For what is spontaneous gives the lead, and then each of the natural processes is brought to completion in this way.

- 21** Maximus of Tyre, *Philosophical lectures* 11.5 (BT p.91.90–92.102 Trapp 1994)

But if in the whole of time there have occurred two, I suppose, or three, an ungodly and lowly and insensitive sort, going astray in what they see, deceived by what they hear, castrated in their souls, unreasoning, sterile and barren, like a lion without courage, an bull without horns or a bird without wings — nevertheless even from this sort you will learn of the divine; for they know it

64 Strato of Lampsacus

ἀφέλης αὐτοῦ τὸ ἀγαθόν, ὡς Λεύκιππος· κἂν προσθῇς τὸ
ὁμοπαθές, ὡς Δημόκριτος· κἂν ὑπαλλάξῃς τὴν φύσιν, ὡς 10
p.92 Στράτων· κἂν δῶς τὴν ἡδονήν, ὡς Ἐπίκουρος· κἂν μὴ εἶναι
φῆς, ὡς Διαγόρας· κἂν ἀγνοεῖν τι φῆς, ὡς Πρωταγόρας.

6 πένυση *U*: ἡσπεύσει *R* 11 τι *del. Russell*

**22 Seneca, De superstitione, ap. Augustinum, De civitate dei 6.10
(CCSL t.47 p.181.14–20 Dombart et Kalb 1955)**

Deinde aliquanto post, cum theologian naturalem prae-
dicans quorundam philosophorum sententias digessisset,
opposuit [sc. Seneca] sibi quaestionem et ait: “Hoc
loco dicit aliquis: Credam ego caelum et terram deos
esse et supra lunam alios, infra alios? Ego feram aut 5
Platonem aut Peripateticum Stratonem, quorum alter fecit
deum sine corpore, alter sine animo?”

4 dicet *AK¹b¹*: dicat *Bl*

**23 Tertullianus, Adversus Marcionem 1.13.3 (CCSL t.1 p.454.15–30
Kroymann 1954)**

Ut ergo aliquid et de isto huius mundi indigno loquar, cui
et apud Graecos ornamentum et cultus, non sordium, nomen
est, indignas videlicet substantias ipsi illi sapientiae
professores, de quorum ingeniis omnis haeresis animatur,
deos pronuntiaverunt, ut Thales aquam, ut Heraclitus 5
ignem, ut Anaximenes aërem, ut Anaximander universa
caelestia, ut Strato caelum et terram, ut Zeno aërem et
aetherem, ut Plato sidera, quae genus deorum igneum
appellat, cum de mundo, considerando scilicet et
magnitudinem et vim et potestatem et honorem et decorem, 10
opem, fidem, legem singulorum elementorum, quae
omnibus gignendis alendis conficiendis reficiendisque

even though they do not want to, and speak of it even though they do not want to, even if you remove its goodness, like Leucippus, or add its being affected in a similar way [to things that are not divine], like Democritus, or exchange it for nature,¹ like Strato, p.92 or grant it pleasure, like Epicurus, or say that it does not exist, like Diagoras,² or say that you do not know anything [about it], like Protagoras.

¹ Or “if you change its nature.” But “exchange it for nature,” i.e., substitute nature for god, has more point.

² Diagoras of Melos (latter part of the 5th century BC), known as “the atheist.”

- 22** Seneca, *On Superstition*, quoted by Augustine, *On the City of God* 6.10 (CCSL vol.47 p.181.14–20 Dombart and Kalb 1955)

Then a little later, when he has made a statement of natural theology by setting out the opinions of certain philosophers, [Seneca] puts a question to himself and says: ‘At this point someone says “Am I to believe that heaven and earth are gods, and that there are some [gods] above the moon and others beneath [it]? Am I to endure either Plato or Strato the Peripatetic, of whom one made god [exist] without a body, the other without a mind?”’

- 23** Tertullian, *Against Marcion* 1.13.3 (CCSL vol.1 p.454.15–30 Kroymann 1954)

So, if I am to say something about that unworthiness of this world, which among the Greeks is called glory and worship, not disgrace, those famous teachers of wisdom, whose cleverness gives life to every heresy, declared indeed that unworthy substances were gods, as Thales did water, Heraclitus fire, Anaximenes air, Anaximander all the heavenly bodies, Strato heaven and earth, Zeno air and ether, [and] Plato the stars, which he calls a fiery kind of gods. Concerning the world, when they considered its greatness and force and power and honour, and the splendour, power, reliability and lawfulness of each of the elements, which unite in producing, nourishing, completing and restoring all things, they,

conspirant, ut plerique physicorum, formidaverint initium
ac finem mundo constare, ne substantiae eius, tantae
scilicet, minus dei haberentur, quas colunt et Persarum
magi et Aegyptiorum hierophantae et Indorum gymno- 15
sophistae.

5–8 Zeno, SVF 1.154 8–9 Plato, *Timaeus* 40A

8 quae M: quod R 13 formidaverint R: formidaverunt MF 13–14 initium
—constare secl. Kroymann 14 constare MR: stare F: dare Regaltii cod. N:
constituere van der Vliet

Quid sid esse

24 Proclus, In Platonis *Timaeum* 37D (BT t.3 p.15.5–11 et 15.31–16.9 Diehl 1906)

ἕκαστον γοῦν τῶν θείων ἀφ' ἑαυτοῦ ἄρχεται τῆς ἐνεργείας,
ὡς καὶ ὁ αἰὼν ἑαυτὸν ἐδράζει πρὸ τῶν αἰωνίων ἐν τῷ ἐνὶ
καὶ συνέχει ὡσαύτως· ὥστε οὐχὶ τὸ ὄν ἐστίν, ὡς φησι
Στράτων ὁ φυσικός, τὸ τῆς διαμονῆς αἴτιον, ἀλλ' ὁ αἰὼν,
καὶ διαμονῆς οὐ γιγνομένης αἰεί, ἀλλ' ἐν ἐνὶ οὐσης ἀνε- 5
ξαλλάκτως, ὡς εἶπεν ὁ Τίμαιος. . . . καὶ τὸ μὲν ἐν ὄν τοῦ
εἶναι μόνως αἴτιον πᾶσι τοῖς ὁπωσοῦν <οὔσιν> εἴτε ὄντως
p.16 εἴτε οὐκ ὄντως, ὁ δὲ αἰὼν τῆς ἐν τῷ εἶναι διαμονῆς. καὶ
τοῦτο ἔδει μᾶλλον τὸν Στράτωνα λέγειν, ἀλλ' οὐχὶ τὴν
διαμονὴν ὀρίζεσθαι τῶν ὄντων τὸ ὄν, ὡς ἐκεῖνος ἐν τῷ 10
Περὶ τοῦ ὄντος βιβλίῳ γέγραφε, τὸ ἴδιον τοῦ αἰῶνος
μετάγων ἐπὶ τὸ ὄν· οὐδὲ γὰρ ἐν τοῖς γενητοῖς ταῦτόν ἐστι
τὸ γίνεσθαι τῷ διαμένειν γιγνόμενον, ἀλλὰ τῆς μὲν
γενέσεως ἴδιον τὸ ἄλλο καὶ ἄλλο δεικνύναι τὸ ἔχον, τοῦ δὲ
διαμένειν τὴν γένεσιν ὁ χρόνος, ἐν ᾧ ἡ γένεσις· καὶ ὅπερ 15
ἐπὶ ταύτης ὁ χρόνος, τοῦτο ἐπὶ τῆς οὐσίας ὁ αἰὼν.

5–6 Plato, *Timaeus* 37d6

5 ἐνς: om. DQ 7 lacunam statuit, in apparatu tamen “<οὔσιν> sensui sufficit”
asseverat Diehl

like the majority of natural [philosophers], were afraid to give the world a beginning and an end,¹ for fear that the substances that make it up, great though they are, might not be regarded as gods — [substances] which are also worshipped by the Persian magi and the Egyptian priests and the Indian naked philosophers.

¹ Kroymann deletes “to give the world a beginning and an end,” and understands the sense as “they . . . were afraid to declare that the world was a god.”

Ontology

- 24** Proclus, *On Plato's Timaeus* 37D (BT vol.3 p.15.5–11 and 15.31–16.9 Diehl 1906)

Each of the divine things commences its activity from itself; thus eternity too establishes itself in the One, before the things that are eternal, and holds [them] together in the same way. So it is not Being that is the cause of continuing,¹ as Strato the naturalist says, but eternity, and [it is the cause] not of a continuing that is constantly coming to be, but of [a continuing] that is in unity without change, as Timaeus says . . . The One Being is the sole
p.16 cause of being for all the things that in any way <are>, whether in reality or not, while eternity [is the cause] of their continuing in being. And this is what Strato ought to have said, rather than defining being as the continuing of the things that are,² as he wrote in his book *On Being*, transferring to being what is [in fact] proper to eternity. For in things that come to be, too, coming to be is not the same as continuing in a generated state; what is proper to coming-to-be is to display what possesses it as now one thing, now another, while [the cause]³ of the continuing of coming-to-be is time, in which coming-to-be [occurs]. And as time is to coming-to-be, so eternity is to being.

¹ Literally “remaining,” “persisting,” and so throughout. As Gottschalk 1965, 168 says, the original form, context and point of Strato's remark cannot be recovered.

² Gottschalk loc. cit. points out that Proclus' own argument here requires that what he interprets Strato as having said is that being is the *cause* of remaining, as in lines 3–4 above.

³ The context in the Greek would rather suggest “[what is proper] to the remaining of coming-to-be is time.”

25A Damascius, *De principiis* 3.5 (CB t.2 p.75.18–76.21 Westerink 1989)

ὁ δὲ Πλάτων τὸ ὄν ὀρίζομενος ἐπεχείρησε μὲν ἀπὸ τῆς ἐνεργείας αὐτὸ ποιῆσαι γνώριμον· τὸ γὰρ δυνάμενον, φησί, ποιεῖν καὶ πάσχειν, τοῦτο ὄν λέγομεν. εἴτα εὐλαβηθεὶς ἢ κινούμενον ὑποστήσασθαι ὃ γε ἐστὸς ἅγιον, οὐδὲ κινούμενον ἀποφαίνεται, ἢ τὸ διπλοῦν τῆς ἐνεργείας ταύτης, τῆς κατὰ τὸ ποιεῖν καὶ πάσχειν οὐκ ἔχων λαβεῖν, τί κοινὸν ἀμφοῖν, ὥσπερ τὸ δύνασθαι ἐκάτερον πρὸ ἐκατέρου
p.76 προελθόν, ἐπὶ τὴν δύναμιν κατέφυγεν καὶ ταύτην <εἶπεν> εἶναι τὸ ὄν, ὡς εἴ τις καὶ τὴν δύναμιν ἐπιχειροῖ γνωρίζειν ἀπὸ τῆς ἐνεργείας. τοιαύτη μὲν γὰρ ἡ δύναμις ἔτι εἴσω μένουσα, οἷα προελθοῦσα ἤδη πρὸς τὸ ἔκτος ἢ ἐνέργεια· τοιαύτη δὲ ἡ οὐσία ἐστῶσα τὸ πᾶμπαν, οἷα παρασκευαζομένη πρὸς κίνησιν ἢ δύναμις. εἰς ὃ μοι δοκεῖ καὶ ὁ Στράτων ἀποβλέψας τὸ μένον εἶναι τὸ ὄν ἀποφήνασθαι, ἐπειδὴ τοῦ ὄντος ἐκτένειαν ἑώρα τὴν δύναμιν οὖσαν. ἔδει δὲ συνιδεῖν ὅτι καὶ εἰ σύνεστι τῷ εἶναι τὸ μένειν, ὅμως οὐκ ἔστι ταυτόν, ὡς αἱ ἔννοιαι σαφῶς διακρίνουσιν, ἄλλο τὸ εἶναι γνωρίζουσαι καὶ ἄλλο τὸ μένειν. δεῖ γάρ τι καὶ εἶναι πρότερον, εἴτα μένειν ἢ κινεῖσθαι. καὶ τὸ μὲν μένειν ἀντίκειται τῷ κινεῖσθαι· τὸ γὰρ μένειν καὶ ἴστασθαι ταυτόν, τὸ δὲ εἶναι ἢ οὐδὲν ἔχει ἀντίθετον, ἢ τὸ μὴ εἶναι, ὡς πολλαχοῦ ὁ Πλάτων ἀντιτίθησιν. ὥστε εἴ τις καὶ ὑπόστασιν ὀρίζοιτο εἶναι τὸ ὄν, εἰς ταυτόν ἀποφέρεται τῷ Στράτωνι νόημα· τὸ γὰρ ὑφεστάναι παρώνυμόν τι τῆς στάσεως· εἰ δὲ ἰδιόν τι σημαίνονμενον ποιεῖ τὴν ὑπόστασιν, λεγέτω πόθεν τὸ δῆλωμα τοῦτο γέγονεν, εἰ μὴ ἄρα παρὰ τὸ ἔστιν, τοῦτο δὲ εἶναι δηλοῖ· πάλιν ἄρα αὐτὸ δι' ἑαυτοῦ.

2–4 *Plato, Sophistes* 247de

4 ἅγιον A¹ *in marg.*, Westerink (*cf. Plato, Sophistes* 249a2): αἴτιον, –ῖτι– *ex corr.*, A¹ *in textu* 6 λαβεῖν, τί Westerink: λαβεῖν τι *cod.* 8 εἶπεν *add.* Westerink A has ++++ 26 times *post* δύναμις A 14 μένον εἶναι Westerink: μένειν E.G. Schmidt 1962, 218: μὲν εἶναι A 23 ὄν Schmidt 1962, 219: ἔν A

25A Damascius, *On Principles* 3.5 (CB vol.2 75.18–76.21 Westerink 1989)

Plato, defining being, attempted to make it known from activity;¹ for what has the potentiality to act and be acted on, he says, is what we say is. But next, being wary of proposing that what is holy and at rest² is changing, he declares that it is not changing. Or else, not being able to grasp what feature is common to both aspects of this double activity of acting and being acted upon, like
 p.76 having the potentiality for each prior to the other, he had recourse to potentiality and said that *this* is [what] being [is], as if someone were to try to make potentiality, too, known from activity. For the potentiality that still remains within is similar in character to the activity which has already proceeded outside; and being, which is altogether at rest, is similar in character to the potentiality which is prepared for change. It seems to me that Strato too had this in mind when he said that what is is what remains,³ since he saw that potentiality was the extension of being. But he should have seen that even if remaining accompanies being, nevertheless it is not the same, as the concepts clearly distinguish them, recognising being as one thing and remaining as another. For something has first to be and [only] then to remain or change. And remaining is opposed to changing, for remaining and being at rest are the same thing, while *being* either has no opposite, or else [its opposite is] not-being, which Plato in many places opposes to it. So if someone were to define being⁴ as subsisting, he would be led into the same idea as Strato. For subsisting is a term derived from being at rest.⁵ But if he gives subsisting some special meaning, let him say where this indication came from, if not from “it is”; for this shows that [a thing] is, and again [that it is] in itself.

¹ Or “actuality.” “Activity” seems more appropriate here, but “actuality” in **26B**.

² An allusion to Plato, *Sophist* 249a2.

³ So Westerink: the MS has “that what is on the one hand is,” which makes no sense. In the next clause Schmidt 1962 (219) argues that the terminology “extension of being” is due to Damascius rather than to Strato himself.

⁴ Schmidt: the MSS have “the one.”

⁵ In Greek both “subsist” and the term here translated “being at rest” derive from the root of the verb “to stand.”

25B Damascius, *De principiis* 3.6 (CB t.2 p.80.5–21 Westerink 1989)

ἔτι δὲ οὐδὲ ἐννοίας προβαλλόμεθα τὰς αὐτὰς κινεῖσθαι τε ἀκούοντες καὶ ἐνεργεῖν· καὶ γὰρ τὸ ἐστάναι καὶ ἡρεμεῖν καὶ καθεύδειν καὶ ὅσα τοιαῦτα ἐνεργήματα νοοῦντες οὐ κινήματα νοοῦμεν, ἀλλὰ τὸ ἑναντίον, τὸ γὰρ ἐστάναι τῷ κινεῖσθαι ἑναντίον. εἰ δὲ τὸ ἐνεργεῖν ἐπ’ ἀμφοῖν, οὐκ ἂν εἴη 5 τὸ κινεῖσθαι ἑναντίον· εἰ δὲ κινεῖσθαι καὶ τὸ κοινὸν καλοῦμεν, τὸ ἐστάναι τί φήσομεν; ἀεὶ γὰρ τῇ κινήσει τὴν στάσιν ἀντιθετέον· καὶ εἰ ἡ δύναμις κίνησις, τί ἂν ἡ στάσις; οὐδὲν γὰρ ἐστίν ὃ ἀντίκειται τῇ ἐνεργείᾳ καὶ τῇ δυνάμει 10 πλὴν τῆς οὐσίας, κατὰ δὴ τινὰ τρόπον· ἡ οὐσία ἄρα στάσις ἔσται. τοῦτό που τὸ τοῦ Στράτωνος, ὅπερ οὐκ ἐδόκει εὖ ἔχειν. εἰ δὲ καὶ γεννητικὴ ἡ οὐσία δυνάμειος καὶ μετ’ αὐτὴν ἐνεργείας, ἡ δὲ κίνησις ἐν τι τῶν πολλῶν γενῶν, ὥσπερ καὶ ἡ στάσις, ἀντιδιήρηται ἄρα πρὸς τὸ ὄν· οὐκ ἄρα ὡς τούτου γέννημα καὶ ἐκτένειαί τις, ἐπεὶ οὐδὲν μᾶλλον τότε τοῦδε 15 μετέχει, ἢ τὸ ἑναντίον.

5–6 εἰ – ἑναντίον *in margine suppl. A*¹ 15 οὐδὲν *Westerink*: οὐδὲ *A*

De inani et loco

26A Theodoretus, *Graecarum affectionum curatio* 4.14 (BT p.104.4–7 Raeder 1904)

οἱ δὲ Στωϊκοὶ ἐν τὸς μὲν τοῦ παντὸς μηδὲν εἶναι κενόν, ἐκτὸς δὲ αὐτοῦ πάμπολύ τε καὶ ἄπειρον. ὁ δὲ Στράτων ἔμπαλιν ἔξωθεν μὲν μηδὲν εἶναι κενόν, ἐνδοθεν δὲ δυνατόν εἶναι.

3 φασι (*sic*) κενόν *MCV* ἐνδον *KBL*

26B Stobaeus, *Eclogae* 1.18.1b (p.156.4–6 Wachsmuth 1884)

Στράτων ἔξωτέρω μὲν ἔφη τοῦ κόσμου μὴ εἶναι κενόν, ἐνδοτέρω δὲ δυνατόν γενέσθαι. — τόπον δὲ εἶναι τὸ

- 25B** Damascius, *On Principles* 3.6 (CB vol.2 p.80.5–21 Westerink 1989)

Moreover, we do not have the same conceptions in mind when we hear “to change”¹ and “to be actual.” For in thinking that standing and being at rest and being asleep and everything like that are actualities we do not think that they are changes, but the opposite, for to be at rest is opposite to changing. If being actual applied to both, changing would not be opposite [to being actual]. But if we call the common [genus] too “changing,” what shall we say being at rest is? For we must always oppose rest to change. And if potentiality is change, what will rest be? For there is nothing that is opposed [both] to actuality and to potentiality apart from being, in a way; so being will be rest. This I suppose is the [view] of Strato, which did not seem to be right. Even if being produces potentiality and after it actuality, change is one of the many kinds, as is rest, so in being contrasted with it [change] is distinguished from being — and not as some product and extension of this, since [change] does not participate in [being] any more than the opposite.²

¹ Or “to be in movement,” and so throughout this passage; but I have used the more comprehensive term, change including change of place.

² I.e., any more than rest does.

On Void and Place¹

- 26A** Theodoret, *Remedy for Greek Attitudes* 4.14 (BT p.104.4–7 Raeder 1904)

The Stoics [say] that there is no void within the universe, but that outside it there is a very great and indefinite [void]. Strato, conversely, [says] that there is no void outside, but that there can be void within.

- 26B** Stobaeus, *Selections* 1.18.1b (p.156.4–6 Wachsmuth 1884)

Strato said that there is no void outside the world, but that it can come to be within [it]. — Place [he said] is the interval between

μεταξὺ διάστημα <τῶν ἐσχάτων> τοῦ περιέχοντος καὶ τοῦ περιεχομένου.

1–2 *Aëtius, Placita* 1.18.4 (DG p.316b8–10 Diels); *non invenitur in [Plutarcho]*
2–4 *Aëtius, Placita* 1.19.3 (DG p.317b27–29 Diels); *non invenitur in [Plutarcho]*

2 δὲ (*alt.*) a *Stobaeo additum ut 2–4 post 1–2 collocaret credidit Diels* 3 τῶν ἐσχάτων *add. Gottschalk 1965, p.169*

- 26C** Anonymus (fortasse Alexander Aphrodisiensis), In Aristotelis *Categorias* 2 1a20–1b9, Archimedes-palimpsest fol. 78v–75r 23–28 (vide quae ad translationem adnotavi)

. . . τέσ[σα]ρας γενέσθαι κατὰ διαίρεσιν προτάσεις, ἥ ἐκτὸς (καὶ) ἐντὸς τοῦ κόσμου εἶναι κενόν ὡς Δημοκρίτῳ τε καὶ Ἐπικούρῳ ἤρεσκεν, ἥ οὔτε ἐντὸς οὔτε ἐκτὸς ὡς Ἀριστοτέλει καὶ Πλάτῳ, ἥ ἐκτὸς μὲν ἐντὸς δὲ οὐ<καθάπερ τοῖς ἀπὸ Ζηνωνος, ἥ ἐντὸς μὲν ἐκτὸς δὲ οὐ>καθ- 5
ἀπερ Στράτῳ ἐδοξεν . . .

4–5 *verba propter homoeoteleuton excidisse videntur; exempli gratia supplent editores*

- 27A** Simplicius, In Aristotelis *Physica*, Corollarium de loco (CAG t.9 601.16–25 Diels 1882)

τῶν δὲ ἀσώματων λεγόντων οἱ μὲν πάντα ἀδιάστατον, οἱ δὲ διαστατὸν λέγουσι· καὶ τῶν πάντη ἀδιάστατον οἱ μὲν ὑποκείμενον τοῖς σώμασιν ὡς Πλάτῳ τὴν ὕλην τόπον λέγων, οἱ δὲ τελεσιουργὸν τῶν σωμάτων, ὡς ὁ ἡμέτερος Δαμάσκιος· τῶν δὲ διαστατὸν λεγόντων οἱ μὲν ἐπὶ δύο 5
διεστῶς ὡς ὁ Ἀριστοτέλης τε καὶ ὁ Περὶπατος ἅπας, οἱ δὲ ἐπὶ τρία, καὶ τούτων οἱ μὲν πάντα ἀδιάφορον καὶ ποτε καὶ ἄνευ σώματος μένον ὡς οἱ περὶ Δημόκριτον καὶ Ἐπικούρον, οἱ δὲ διάστημα καὶ αἰεὶ σῶμα ἔχον καὶ ἐπιτήδειον 10
πρὸς ἕκαστον ὡς οἱ κλεινοὶ τῶν Πλατωνικῶν καὶ

<the extremities of>¹ what surrounds and what is surrounded.

¹ Added by Gottschalk 1965, 169. That is: the place of the water in a jar is the interval between the inner surface of the container on opposite sides, or between the outer surface of what is contained – it makes no difference, as the two are contiguous. Strato's view is to be contrasted with that of Aristotle, for whom it is the inner surface *itself* of the container (and not the interval bounded by it) that is the place of the water (Aristotle, *Physics* 4.4 212a6).

26C Anonymous (perhaps Alexander of Aphrodisias), *On Aristotle's Categories* 2 1a20–1b9, Archimedes-palimpsest fol.78v–75r 24–28¹

. . . four propositions come about according to a division:² either there is void both outside and inside the world, as Democritus and Epicurus held, or neither inside nor outside, as Aristotle and Plato [held], or outside but not inside <as the followers of Zeno³ [held], or inside but not outside>,⁴ as Strato supposed . . .

¹ Decipherment by Reviel Netz and others: work in progress, see www.archimedes-palimpsest.org.

² The context is concerned with four-way permutations of the pattern A and B/A and not B/B and not A/neither A nor B. Compare Simplicius, *On the Categories* 44.18–25 (but without this particular example).

³ The Stoics (cf. **26A**), referred to by this formula earlier on the same page (line 11).

⁴ The end of the third (Stoic) permutation and the start of the fourth (Strato) appear to have dropped out through homoeoteleuton.

27A Simplicius, *On Aristotle's Physics, Corollary on Place* (CAG vol.9 p.601.16–25 Diels 1882)

Of those who say [that place is] incorporeal some say [that it is] unextended in every dimension, others that it is extended. Of those who [say that it is] unextended in every dimension some [say that] it underlies body, like Plato when he says that matter is place, and others that it brings bodies to completion, like our Damascius. Of those who say [that it is] extended some [say that it is] extended in two dimensions, like Aristotle and all the Peripatets,¹ others in three, and of the latter some that it is undifferentiated in every direction and sometimes remains without [being occupied by] body, like the followers of Democritus and Epicurus, others that it is an extension and always has body [in it] and is fitted for each thing, as [do] the distinguished ones among the

ὁ Λαμψακηνὸς Στράτων.

3 ὁ Πλάτων *aF* 4 τελεσιεργὸν *E* 5 διαστατὸν *punctis subduxit F* 6
διεστῶτα *a* 6–7 οἱ δὲ ἐπὶ τρία *om. aF* 7 ἐπὶ *Brandisii unus codex: περι E*
8 ὁ περὶ *F* 9 καὶ (*alt.*) *om. E* 11 Λαμψακηνῶν *F¹*

27B Simplicius, In Aristotelis Physica, Corollarium de loco (CAG t.9 618.20–25 Diels 1882)

οἱ δὲ ἰσόμετρον αὐτὸ τῷ κοσμικῷ σώματι ποιοῦσι, καὶ διὰ
τοῦτο τῇ μὲν ἑαυτοῦ φύσει κενὸν εἶναι λέγουσι, πεπληρ-
ῶσθαι δὲ αὐτὸ σωμάτων ἀεὶ, καὶ μόνῃ γε τῇ ἐπινοίᾳ
θεωρεῖσθαι ὡς καθ' αὐτὸ ὑφεστῶς, οἷοί τινες οἱ πολλοὶ τῶν
Πλατωνικῶν φιλοσόφων γεγόνασι· καὶ Στράτωνα δὲ οἶμαι 5
τὸν Λαμψακηνὸν ταύτης γενέσθαι τῆς δόξης.

5 ταύτης γενέσθαι τῆς *E*: τῆς τοιαύτης γενέσθαι *aF*

28A Simplicius, In Aristotelis Physica 4.6 213b22–27 (CAG t.9 p.652.18–25 Diels 1882)

ταῦτα μὲν οὖν τὰ ἐπιχειρήματα τέθεικεν ὁ Ἀριστοτέλης
τῶν λεγόντων εἶναι τὸ κενόν. ὁ δὲ Λαμψακηνὸς Στράτων
ταῦτα μὲν εἰς δύο συνήγαγε τὰ τέτταρα εἰς τε τὴν κατὰ
τόπον κίνησιν καὶ εἰς τὴν τῶν σωμάτων πίλησιν, τρίτον δὲ
προστίθησι τὸ ἀπὸ τῆς ὀλκῆς· τὴν γὰρ σιδηρίτιν λίθον 5
ἕτερα σιδήρια δι' ἐτέρων ἔλκειν συμβαίνει, ὅταν ἐπι-
σπάσῃται τὸ ἐκ τῶν πόρων τοῦ σιδήρου ἢ λίθος, ᾧ
σώματι καὶ συνέλκεται ὁ σίδηρος, <καὶ> οὗτος πάλιν τοῦ
ἐφεξῆς ἔλκει καὶ οὗτος ἄλλου, καὶ οὕτως ὀρμαθὸς
σιδηρίων ἀποκρεμάννυται τῆς λίθου. 10

6 σιδήρια] σιδήρια *compendiose E* 7 κένον post σιδήρου *inserendum coni. Diels in app.* 7–8 ᾧ σώματι *Fa*: τῷ σώματι *E*: “suspicor ᾧ σπάσματι” *Diels*
8 καὶ (*alt.*) *exhib. a: om. EF* 10 τῆς] τοῦ *E*

Platonists and Strato of Lampsacus.

¹ Aristotle (*Physics* 4.4 212a20) defines place as the limit of what surrounds a thing, and this limit is a two-dimensional surface.

27B Simplicius, *On Aristotle's Physics, Corollary on Place* (CAG vol.9 p.618.20–25 Diels 1882)

Others make [place] equal in extent to the body of the world, and for this reason they say that it is empty in its own nature, but is always filled with bodies, and is only considered in thought as subsisting in itself, as the majority of Platonist philosophers have [supposed]. And I think that Strato of Lampsacus shared this view.

28A Simplicius, *On Aristotle's Physics* 4.6 213b22–27 (CAG vol.9 p.652.18–25 Diels 1882)

These then are the arguments Aristotle has set down from those who say that the void exists.¹ Strato of Lampsacus combined these four into two, spatial movement and compression of bodies, and as a third he adds the [argument] from attraction. For the lodestone attracts iron objects through one another, when the stone draws out the [substance]² from the pores of the iron, the iron too being drawn along together with this body,³ and this [iron] in turn attracts [the substance from]⁴ the next [piece of iron] and this [that of another], and so a chain of iron objects hangs from the stone.

¹ The sequel shows that Simplicius is referring to the four arguments at 4.6 213b2–22, (a) notion is impossible without void, (b) from compression, (c) from growth by the addition of nourishment and (d) from ashes absorbing water. At b22–27 Aristotle gives a fifth, Pythagorean argument, (e) from separation by void creating the number-series.

² Diels proposed adding “void” to the Greek text. But this is clearly wrong; the lodestone or magnet does not draw out void, it creates, by drawing out what was in the pores, a potential or actual void which in turn has to be filled. See the next note.

³ Diels suggested “together with this attraction.” But see the previous note.

⁴ Following Diels’ suggestion for understanding the passage, but interpreting it in terms of substance rather than of void.

28B Simplicius, In Aristotelis Physica 4.7 214b3–11 (CAG t.9 p. 663.2–8 Diels 1882)

ταῦτα μὲν οὖν ὁ Ἀριστοτέλης πρὸς τοὺς ἱστορηθέντας ὑπ’ αὐτοῦ τιθέναι τὸ κενὸν λόγους ἀντεῖρηκεν· ὁ δὲ Στράτων καὶ τὸν ἀπὸ τῆς ἔλξεως ἀναλύων “οὐδὲ ἡ ἔλξις, φησὶν, ἀναγκάζει τίθεσθαι τὸ κενόν· οὔτε γὰρ εἰ ἔστιν ὅλως ἔλξις φανερόν (ὅτε καὶ Πλάτων αὐτὸς τὴν ἐλκτικὴν δύναμιν ἀναιρεῖν δοκεῖ) οὔτε εἰ ἔστιν ἡ ἔλξις, δῆλον, εἰ διὰ τὸ κενὸν ἢ λίθος ἔλκει καὶ μὴ δι’ ἄλλην αἰτίαν· οὐ γὰρ ἀποδεικνύουσιν ἄλλ’ ὑποτίθενται τὸ κενὸν οἱ οὕτω λέγοντες.”

5–6 *Plato, Timaeus 80bc*

5–6 φανερόν – ἔλξις *iteravit E* 6 ἢ *om. F* 7 οὐ *E*: οὐδὲ *Fa*

29 Simplicius, In Aristotelis Physica 4.7 214a26–32 (CAG t.9 p.659.17–28 Diels 1882)

ἀλλ’ ἴσως ἂν τις λέγοι τὰ τοιαῦτα μηδὲ κινεῖσθαι κατὰ τόπον καθ’ ἡμᾶς, ὅσα τὸν αὐτὸν φυλάττει τόπον κατὰ τὴν ὁλότητα, εἴπερ καὶ τὸν ὅλον οὐρανὸν ἀκίνητον κατὰ τόπον λέγομεν· καὶ μέντοι ἐπὶ τούτων μόνων δόξει τὸ κενὸν μὴ εἶναι αἴτιον τῆς κατὰ τόπον κινήσεως τῶν κατὰ τὸ ὅλον ἐν τῷ αὐτῷ τόπῳ μενόντων αἰεί. προσφυέστερον οὖν ἔστι τὸ τοῦ Στράτωνος παράδειγμα ταύτας τὰς ὑπονοίας ἐκφεύγον· ἐὰν γὰρ εἰς ἀγγεῖόν τις πεπληρωμένον ὕδατος ψηφίδα ἐμβαλὼν καταστρέψῃ τὸ ἀγγεῖον ἐπὶ στόμα ἐπέχων τὴν ἔκκροιν, ἢ ψηφὶς ἐπὶ τὸ στόμα τοῦ ἀγγείου φέρεται ἀντιμεθισταμένου τοῦ ὕδατος εἰς τὸν τῆς ψήφου τόπον. τὸ δὲ αὐτὸ καὶ ἐπὶ τῶν νηχομένων συμβαίνει καὶ ἰχθύος καὶ οὔτινοσούν. ἐρεῖ δὲ καὶ αὐτὸς Ἀριστοτέλης πλείονα περὶ ταύτης τῆς ἀντιμεταστάσεως.

1 κατὰ *ex* πρὸς *corr. F* 4 μόνον *aF* 7 ἐκφεύγον *E*: ἐκφυγόν *a*: ἐκφυγόν *ex* ἐκφυγών *F* 9 ἐπέχων *F* 10 ἔκκροιν *E* 11 ψηφὶς *E*: ψήφος *aF* 13 εἴ τιнос οὖν *E* 14 ταύτης *om. aF*

- 28B** Simplicius, *On Aristotle's Physics* 4.7 214b3–11 (CAG vol.9 p. 663.2–8 Diels 1882)

These then are Aristotle's replies¹ to the arguments he recorded in favour of the void. Strato refutes also that from attraction, [saying] "neither does attraction compel us to suppose that there is a void: for, [first], it is not clear whether attraction occurs at all (seeing that Plato himself thinks that he has done away with the attractive power),² and [second], even if attraction occurs, it is not clear whether the lodestone attracts on account of the void rather than of some other cause. For those who argue thus do not demonstrate the void, but rather presuppose it."

¹ At 4.7 214a22–b11.

² At *Timaeus* 80bc Plato explains the action of the magnet rather in terms of circular thrust.

- 29** Simplicius, *On Aristotle's Physics* 4.7 214a26–32 (CAG vol.9 p.659.17–28 Diels 1882)

Perhaps though someone might say that according to us those things do not move spatially which keep to the same place in their entirety, if we say that the heaven as a whole is unmoved spatially; and yet it is in the case of these things only, those that remain always in the same place in their entirety, that the void does not seem to be a [necessary] explanation of spatial movement.¹ More suitable is the example [put forward] by Strato, which avoids these objections. If one puts a pebble into a vessel filled with water and turns the vessel upside down, stopping [any] outflow from its mouth, the pebble will move to the mouth of the vessel as the water exchanges its place [with it and moves] into the place [where] the pebble [was]. The same thing happens also in the case of things that swim, fish and whatever else it may be. Aristotle himself, too, will say more about this mutual replacement.

¹ The objection indicated here is the following. The opponents of the void, among whom Simplicius counts himself, argue that spatial motion is possible without void, as is shown by the case of rotating bodies. To this it is, reasonably, objected that as far as this argument is concerned rotating bodies provide the *only* counter-example, and that it is questionable whether bodies that rotate in a single place can be described as moving spatially at all.

30A Simplicius, In Aristotelis Physica 4.9 216b27–28 (CAG t.9 p. 693.10–29 Diels 1882)

ταῦτα μὲν οὖν ὁ Ἀριστοτέλης περὶ τοῦ κενοῦ διετάξατο· ὁ
 μέντοι Λαμψακηνὸς Στράτων δεικνύναι πειράται, ὅτι ἔστι
 τὸ κενὸν διαλαμβάνον τὸ πᾶν σῶμα, ὥστε μὴ εἶναι
 συνεχές, λέγων ὅτι “οὐκ ἂν δι’ ὕδατος ἢ ἀέρος ἢ ἄλλου
 σώματος ἐδύνατο διεκπίπτειν τὸ φῶς οὐδὲ ἡ θερμότης οὐδὲ
 ἄλλη δύναμις οὐδεμία σωματική. πῶς γὰρ ἂν αἱ τοῦ ἡλίου
 ἀκτίνες διεξέπιπτον εἰς τὸ τοῦ ἀγγείου ἕδαφος; εἰ γὰρ τὸ
 ὑγρὸν μὴ εἶχε πόρους, ἀλλὰ βία διέστελλον αὐτὸ αἱ αὐγαί,
 συνέβαιnen ὑπερεκχεῖσθαι τὰ πλήρη τῶν ἀγγείων, καὶ οὐκ
 ἂν αἱ μὲν τῶν ἀκτίνων ἀνεκλῶντο πρὸς τὸν ἄνω τόπον, αἱ
 δὲ κάτω διεξέπιπτον.”

ἀλλὰ ταῦτα μὲν οἶμαι λύειν δυνατόν κατὰ τὰς
 Περιπατητικὰς ὑποθέσεις, καθ’ ἃς καὶ ἡ θερμότης καὶ αἱ
 ἄλλαι σωματικαὶ δυνάμεις καὶ τὸ φῶς ἀσώματα ὄντα οὐ
 χρήζει κενοῦ διαστήματος ὑποκειμένου πρὸς ὑπόστασιν
 καὶ δίοδον, ἀλλ’ ἐν τοῖς σώμασιν ὑφίσταται οὐκ ὀγκοῦντα
 τὰ σώματα. εἰ δὲ καὶ σῶμά τις λέγοι τὸ φῶς εἶναι καὶ
 ἔνυλον σῶμα τό τε ὑπὸ σελήνην τοῦ ἡλίου φῶς μαρ-
 τυρόμενος τὰς τε ἀνακλάσεις καὶ τὰς τῶν στερεῶν
 ἀντιφράξεις, ὅτι παθητικῇ ὕλῃ συμμέμικται, καὶ οὕτως διὰ
 τῆς μανώσεως καὶ πυκνώσεως δυνατόν λύειν τὴν ἀπορίαν.
 οὐδὲν γὰρ κωλύει τὰ οὕτω μανὰ τῶν σωμάτων ὡς ὕδωρ καὶ
 ἀέρα πυκνούμενα χώραν διδόναι τισὶ τῶν ἀκτίνων εἰς
 διέκπτωσιν. ὅσαι δὲ πυκνοτέροις μέρεσι προσπίπτουσιν,
 αὗται ἀντανακλῶνται.

7–8 cf. [Aristotelem], *Problemata* 11.58 905b2–6; 25.9 939a12–14

1 τοῦ κενοῦ *E*: τούτου *Fa* 3 διαλαμβάνον *Fa*: διαλαμβανόμενον *E* 5
 ἐκπίπτειν *F* 6 ἂν *om. Fa* 7 τοῦ ἀγγείου *om. F* 8 αὐγαί] ἀγωγαί *E* 11
 κάτω *iteravit F* 14 ἀσώματων *E* 16 ὀγκοῦν *a* 17 τις *om. E* 18 τε] γε *Fa*

30B Hero, *Pneumatica* 1 (BT p.24.20–28.11 Schmidt 1899)

ὅτι δὲ ἔστι κενά, καὶ ἐκ τούτων ἂν τις καταλάβοι. μὴ γὰρ
 ὄντων αὐτῶν, οὐτ’ ἂν διὰ τοῦ ὕδατος οὔτε διὰ τοῦ ἀέρος
 οὔτε δι’ ἄλλου σώματος οὐδενὸς ἡδύνατο ἂν διεκπίπτειν τὸ

30A Simplicius, *On Aristotle's Physics* 4.9 216b27–28 (CAG vol.9 p. 693.10–29 Diels 1882)

This then is what Aristotle set out about the void. But Strato of Lampsacus tries to show that void divides the whole of body, so that it is not continuous, saying “Neither light nor heat nor any other bodily power would be able to pass right through water or air or another body [if this were not the case]. For how would the rays of light pass right through to the base of a vessel [of water]? For if the liquid did not have pores, but the rays divided it by force, the result would be that full vessels would overflow, and it would not be the case that some of the rays would be reflected upwards, while others pass through below.”

I think however that it is possible to resolve these points in accordance with Peripatetic assumptions, according to which heat and the other bodily powers and light, being incorporeal, do not need a void interval as the basis¹ for their existing and passing through, but exist in bodies without increasing their bulk. Even if someone were to say that light is both a body and a body with matter, appealing to the sunlight beneath the moon,² reflections and obstructions by solid bodies as evidence that [light] is mixed with matter that can be affected, even so it is possible to resolve the difficulty by means of rarefaction and condensation. For nothing prevents bodies which are as rare as water and air from making way by condensation for some of the rays to pass through, while it is all the rays which strike denser parts that are reflected.³

¹ Or (taking *hupokeimenou* as depending on, rather than agreeing with, *diastematos*): “do not need a void interval in what underlies.”

² The point is presumably that a solar eclipse shows that sunlight can be affected by the interposition of the moon.

³ As **30B** 11–15 shows, Simplicius has — characteristically — detached this point from what he quotes from Strato, and adapted it for his own use in an argument against Strato.

30B Hero, *Pneumatica* 1 (BT p.24.20–28.11 Schmidt 1899)

That there are voids can also be grasped from what follows. If they did not exist, it would not be possible for light or heat or any other bodily power to pass right through water or air or any other

p.26 φῶς οὐδὲ ἡ θερμότης οὐδ' ἄλλη δύναμις οὐδεμία
 5 σωματική. ἐπεὶ πῶς ἂν αἱ τοῦ ἡλίου ἀκτῖνες διὰ τοῦ ὕδατος
 διεξέπιπτον εἰς τὸν τοῦ ἀγγείου πυθμένα; εἰ γὰρ τὸ ὕγρον
 μὴ εἶχε πόρους, ἀλλὰ βία διέστελλον αἱ αὐγαὶ τὸ ὕδωρ,
 συνέβαινεν ἂν ὑπερεκχεῖσθαι τὰ πλήρη τῶν ἀγγείων· ὅπερ
 οὐ φαίνεται γινόμενον. ἔτι δὲ καὶ ταύτη φανερόν· εἰ γὰρ
 βία τὸ ὕδωρ διέστελλον, οὐκ ἂν τῶν ἀκτίνων αἱ μὲν
 10 ἀνεκλῶντο πρὸς τὸν ἄνω τόπον, αἱ δὲ καὶ κάτω διεξ-
 έπιπτον. νυνὶ δὲ ὅσαι μὲν προσκόπτουσιν αὐγαὶ τοῖς
 τοῦ ὕδατος μορίοις, ὥσπερ ἀνακρουόμεναι ἀνακλῶνται
 πρὸς τὸν ἄνω τόπον· ὅσαι δὲ εἰς τὰ κενὰ τοῦ ὕδατος
 15 ἐμπίπτουσιν, ὀλίγοις προσπίπτουσαι μορίοις αὗται διεκ-
 πίπτουσιν εἰς τὸ τοῦ ἀγγείου ἕδαφος.

ἔτι δὲ καὶ ταύτη φανερόν, ὥς ἐν τῷ ὕδατι ὑπάρχει κενά,
 τῷ τὸν ἐμβαλλόμενον οἶνον εἰς τὸ ὕδωρ ὀραῖσθαι κατὰ
 χύσιν εἰς πάντα τόπον τοῦ ὕδατος χωροῦντα. τοῦτο δὲ οὐκ
 ἂν ἐγένετο, μὴ ὄντων ἐν τῷ ὕδατι κενῶν. φέρεται δὲ καὶ τὸ
 20 φῶς τὸ ἕτερον διὰ τοῦ ἐτέρου· ὅταν γάρ τις πλείους ἄψῃ
 λύχνους, ἅπαντα φωτίζεται μᾶλλον, τῶν αὐγῶν πάντῃ
 φερομένων δι' ἀλλήλων. ἀλλὰ μὴν καὶ διὰ χαλκοῦ καὶ
 σιδήρου καὶ τῶν ἄλλων ἀπάντων διεκπίπτει σωμάτων,
 25 καθάπερ καὶ τὸ ἐπὶ τῆς νάρκης τῆς θαλασσίας γινόμενον.
 ὅτι δὲ καὶ ἄθρουν κενὸν γίνεται παρὰ φύσιν, δέδεικται διὰ
 τε τοῦ προσφερομένου τῷ στόματι κούφου ἀγγείου καὶ διὰ
 τοῦ ἱατρικοῦ ᾧου.

περὶ μὲν οὖν τῆς τοῦ κενοῦ φύσεως καὶ ἄλλων πολλῶν
 οὐσῶν ἀποδείξεων, ἱκανὰς εἶναι καὶ τὰς εἰρημένας
 30 νομίζομεν· καὶ γὰρ δι' αὐτῶν τῶν αἰσθητῶν τὰς ἀποδείξεις
 p.28 ἐποιησάμεθα. ἐπὶ πάντων τοίνυν ἔστιν εἰπεῖν, ὅτι πᾶν μὲν
 σῶμα ἐκ λεπτομερῶν συνέστηκεν σωμάτων, ὧν μεταξύ
 ἐστὶ παρεσπαρμένα κενὰ ἐλάττονα τῶν μορίων· διὸ
 35 καὶ καταχρηστικῶς μὴδὲν εἶναι κενὸν λέγομεν, βίας

3 ἂν *om. b* 4 οὐδὲ *Diels*: οὐτε *codd.* 5 διὰ τοῦ ὕδατος *om. bL et Simplicius [30A], del. Diels* 6 διεξέπιπτον *Diels ex Simplicio*: ἐξέπιπτον *codd.* 15–16 διεκπίπτουσιν *Leid. Voss. 44*: διαπίπτουσιν *ab* 17 ὑπάρχει] παρέχει *C* 18 εἰς *om. T* 22 αὐγῶν *J.G. Schneider*: αὐτῶν *codd.* 23–24 καὶ διὰ σιδήρου *BL* 24 σωμάτων <τὸ θερμόν> *Gomperz* 25 καὶ *om. L* τὸ *om. b* τῆς θαλασσίας ἴδοι τις ἂν τὸ (τὸ *om. C*) γινόμενον *b* 26 δέδεικται *om. C* 26–28 *post p.22.13 Schmidt transferenda putavit Gottschalk* 29 οὖν *om. T* πολλῶν *A¹G¹*: πλειόνων *A²TG²bL* 30 οὐσῶν *om. T*

p.26 body. For how would the rays of the sun pass right through the water to the base of a vessel? For if the liquid did not have pores, but the rays divided the water by force, the result would be that full vessels would overflow, which clearly does not happen. Moreover, [the point] is clear in the following way too; if [the rays] divided the water by force, it would not be the case that some of the rays would be reflected upwards, while others pass through below. But as it is as many of the rays as strike the particles of water are as it were checked and reflected upwards, while those that enter into the voids in the water strike against few particles and so pass right through to the base of the vessel.

It is also clear in the following way that there are voids in water, from the fact that wine that is poured into water is seen going to every part of the water as it is poured. This would not happen, if there were not voids in the water. And one light passes through another; for when someone lights several lamps, they all give more light,¹ the rays passing through each other in every direction. And [things]² pass right through bronze and iron and all other bodies, as with what happens in the case of the sting-ray.³ But that a continuous void comes to be, [but does so] contrary to nature, is shown by the empty vessel applied to the mouth⁴ and by the medical cupping-glass.

Well, although there are many other demonstrations of the nature of the void, we consider those that have been stated are sufficient; for we have given our demonstrations by means of
p.28 things that can actually be perceived. So in every case it can be said that every body is composed of small bodily particles, between which there are scattered voids which are smaller than the particles. And for this reason we say inaccurately that there is no void,⁵ unless some force intervenes, but [we say]

¹ The claim is not just that several lamps give more light than one, but that the light of each lamp reinforces that of the others, so that the whole is greater than the sum of the parts.

² Gomperz here supplied "heat passes."

³ See Theophrastus, 369 FHS&G, and the commentary thereon.

⁴ If one places an empty vessel over one's mouth and sucks the air in, the vessel will adhere to the face around the mouth.

⁵ Diels added "continuous" to the text, to give "that there is no continuous void." But this gives precisely the wrong sense; the claim is that when we say, loosely but wrongly, that there is no void (simply), we are actually referring to the absence of continuous void unless created by force; the reason that our expression is inaccurate is that there *are* small non-continuous voids in bodies.

τινὸς μὴ παρεισελθούσης, ἀλλὰ πάντα πλήρη εἶναι ἤτοι
 ἀέρος ἢ ὕγρου ἢ ἄλλης τινὸς οὐσίας· καθ' ὅποσον δ' ἂν τι
 τούτων ἐκχωρῇ, κατὰ τοσοῦτον ἕτερον ἐπακολουθοῦν τὸν
 κενούμενον ἀναπληροῖ τόπον· καὶ ὅτι κενὸν μὲν ἄθρουν
 οὐκ ἔστι κατὰ φύσιν βίας τινὸς μὴ παρεισελθούσης, καὶ 40
 πάλιν ὅτι [οὐκ] ἔστι ποτὲ τὸ παράπαν κενόν, παρὰ φύσιν δὲ
 γενόμενον.

35 κενὸν <ἄθρουν> *Diels, sed perperam* 35–36 βίας—παρεισελθούσης
secl. Gottschalk 38 ἐκχωρῇ *a(-ei T): ἐγχωρῇ bL* 40–41 καὶ πάλιν—κενόν
secl. Gottschalk 41 οὐκ *delendum recte coniecit in apparatu Schmidt* 42
 γενόμενον *a: γινόμενον b*

De Tempore

31 Simplicius, In Aristotelis Physica, Corollarium De tempore (CAG t.9 p.788.33–790.29 Diels 1882)

‘Ο δέ γε Πλάτων καὶ Ἀριστοτέλης ἦν ἐσχέτην περὶ χρόνου
 δόξαν, εἴρηται πρότερον. καὶ Θεόφραστος δὲ καὶ Εὐδημος
 οἱ τοῦ Ἀριστοτέλους ἐταῖροι τὰ αὐτὰ φαίνονται τῷ
 Ἀριστοτέλει περὶ χρόνου δοξάσαντές τε καὶ διδάξαντες. ὁ
 μέντοι Λαμψακηνὸς Στράτων αἰτιασάμενος τὸν ὑπ’ Ἀρισ- 5
 τοτέλους τε καὶ τῶν Ἀριστοτέλους ἐταίρων ἀποδοθ-
 p.789 ἑντα τοῦ χρόνου ὀρισμὸν αὐτὸς καίτοι Θεοφράστου
 μαθητῆς ὢν τοῦ πάντα σχεδὸν ἀκολουθήσαντος τῷ
 Ἀριστοτέλει καινοτέραν ἐβάδισεν ὁδόν· ἀριθμὸν μὲν γὰρ
 κινήσεως εἶναι τὸν χρόνον οὐκ ἀποδέχεται, διότι ὁ μὲν 10
 ἀριθμὸς διωρισμένον ποσόν, ἡ δὲ κίνησις καὶ ὁ χρόνος
 συνεχής, τὸ δὲ συνεχὲς οὐκ ἀριθμητόν· εἰ δέ, ὅτι ἄλλο καὶ
 ἄλλο τὸ μέρος τῆς κινήσεως καὶ τούτων τὸ μὲν πρότερον
 τὸ δὲ ὕστερον, κατὰ τοῦτο ἔστι τις τῆς κινήσεως ἀριθμὸς,
 οὕτω γε ἂν καὶ τὸ μῆκος ἀριθμητόν εἴη (καὶ γὰρ καὶ τοῦτο 15
 ποσόν ἄλλο καὶ ἄλλο ἐστί) καὶ τῶν ἄλλων τῶν κατὰ
 συνέχειαν γινομένων, καὶ τὸ μὲν πρότερον τὸ δὲ ὕστερον,
 ὥστε καὶ τοῦ χρόνου εἴη ἂν χρόνου χρόνος. ἔτι δὲ ἀριθμοῦ
 μὲν οὐκ ἔστι γένεσις καὶ φθορά, κἂν τὰ ἀριθμητὰ

1–5 *Eudemus, fr.91 Wehrli* 2–12 *Theophrastus, fr.151B FHS&G*

8 σχεδὸν *om. Fa* 9 μὲν *om. F* 14 τῆς *om. Fa* 15 καὶ γὰρ καὶ τοῦτο *E* 18
 δὲ *om. a* 19 καὶ *E: ἡ Fa*

that all things are full either of air or of water or of some other substance, and that in so far as some one of these departs, to this extent another follows it in and fills up the place that has been emptied; and that continuous void does not exist naturally, unless some force intervenes, and conversely that absolute void does⁶ exist, but comes into being unnaturally.

⁶ Following Schmidt's suggested deletion of "not." However, *to parapan kenon* is an odd expression for "absolute void," and Gottschalk supposes that there is more extensive corruption and that the whole clause "and conversely . . . does exist" should be deleted.

Time

- 31** Simplicius, *On Aristotle's Physics, Corollary on Time* (CAG vol.9 p.788.33–790.29 Diels 1882)

The opinion that Plato and Aristotle held about time has been stated previously. Theophrastus and Eudemus too, the colleagues of Aristotle, clearly held and taught the same opinions concerning time as Aristotle. But Strato of Lampsacus, finding fault with the definition of time given by Aristotle and Aristotle's colleagues, p.789 although he was a pupil of Theophrastus, who followed Aristotle in almost everything, himself followed a new path. For he did not accept that time is the number of change,¹ because number is a discrete quantity, but change and time are continuous, and what is continuous cannot be numbered. If there is some number of change because the parts of the change are different from one another and one of them is earlier, another later, then in this way length too will be able to be numbered (for this too is one quantitative [part] after another), as will the other things which involve continuity, and one [part] will be earlier and another later, so that time will possess a time of time.² Moreover, number does not come to be or pass away, even if the things that are

¹ Or "motion," which is the primary type of change. But I have used the wider term in the light of **34** below.

² Strato argues that, if the distinction between number and continuum is disregarded, time as the number of change will itself be something that could be numbered, so that another time will be the number of the first time.

φθειρήται, ὁ δὲ χρόνος καὶ γίνεται καὶ φθείρεται συνεχῶς. 20
καὶ τοῦ μὲν ἀριθμοῦ ἀναγκαῖον εἶναι πάντα τὰ μέρη (μὴ
γὰρ οὐσῶν τῶν τριῶν μονάδων οὐδ' ἂν ἡ τριάς εἴη), τοῦ δὲ
χρόνου ἀδύνατον. ἔσται γὰρ ὁ πρότερος χρόνος καὶ ὁ
ὑστερος ἅμα. ἔτι τὸ αὐτὸ ἔσται μονὰς καὶ νῦν, εἴπερ ὁ
χρόνος ἀριθμός. ὁ μὲν γὰρ χρόνος ἐκ τῶν νῦν σύνθετος, ὁ 25
δὲ ἀριθμὸς ἐκ μονάδων.

καὶ τοῦτο δὲ ἀπορεῖ· τί μᾶλλον ἔστιν ὁ χρόνος ἀριθμὸς
τοῦ ἐν κινήσει προτέρου καὶ ὑστέρου ἢ τοῦ ἐν ἡρεμίᾳ; καὶ
γὰρ ἐν ταύτῃ ὁμοίως ἔστι τὸ πρότερον καὶ ὑστερον. ἀλλὰ
τοῦτο μὲν ἐκ τῶν εἰρημένων ἤδη ῥάδιον ἐπιλύσασθαι. τῆς 30
γὰρ ἐν γενέσει ῥοῆς, ἣτις κοινὴ καὶ κινήσεώς ἔστι καὶ τῆς
ἀντικειμένης αὐτῇ ἡρεμίας, καὶ τοῦ ἐν πᾶσι τοῖς γινομένοις
εἶναι μέτρον ὁ χρόνος ὑπὸ τοῦ Ἀριστοτέλους ἐλέγετο.
ἀριθμὸν δὲ τὸν χρόνον ἔλεγεν, οὐχ ὅτι ἀπλῶς ἀριθμός
(συνεχῇ γὰρ εἶναι δέικνυσι τὸν χρόνον ὥσπερ καὶ τὸ 35
μέγεθος καὶ τὴν κίνησιν), ἀλλ' ὥς τῷ διορισμῷ τοῦ ἐν τῇ
συνεχείᾳ προτέρου καὶ ὑστέρου γνωριζόμενον ὑπὸ τῶν
αἰσθέσθαι χρόνου δυναμένων. ὥστε οὐδὲν κινεῖ τῆς
Ἀριστοτέλους ἐννοίας τὰ ἀπὸ τοῦ ἀριθμοῦ ἐπιχειρήματα.

πρὸς δὲ τὸ ἐν χρόνῳ εἶναι λεγόμενον καλῶς ἐνίστασθαι 40
δοκεῖ· “εἰ γὰρ τοῦτό ἐστι,” φησί, “τὸ ἐν χρόνῳ εἶναι τὸ ὑπὸ
τοῦ χρόνου περιέχεσθαι, οὐθὲν ἂν δῆλον ὅτι τῶν αἰδίων ἐν
χρόνῳ εἴη.” ἀλλ' ἔοικεν Ἀριστοτέλης τὸ ἐν τῷ παντὶ χρόνῳ
ὑφεστῶς αἰώνιον λέγειν, ἀλλ' οὐκ ἐγγχρονον ἅτε οὐ 45
περιεχόμενον χρόνῳ. μήποτε δέ, εἰ ἐν τῷ αἰεὶ γίνεσθαι τὸ
εἶναι ἔχει ὁ αἰεὶ χρόνος, καὶ τὸ ἐν χρόνῳ αἰδίων τοιοῦτόν
ἔστιν οἶον ἢ τοῦ οὐρανοῦ κίνησις, ὥς τὸ αἰεὶ κατὰ τὸ ἐπ'
ἄπειρον ἔχειν, ἀληθὲς εἰπεῖν ὅτι πᾶς ὁ λαμβανόμενος
χρόνος ὑπὸ χρόνου ἄλλου περιέχεται.

καὶ ἄλλα δὲ πολλὰ ἀντειπὼν πρὸς τὴν Ἀριστοτέλους 50
ἀπόδοσιν ὁ Στράτων αὐτὸς τὸν χρόνον τὸ ἐν ταῖς πράξεσι

43–45 cf. Aristotelem, *Physica* 4.12 221b3–5

20 φθείρεται καὶ γίνεται *E* 21 εἶναι *om. E* 30 ἐπιλύσασθαι *E*: ἀπολύσασθαι
Fa 33 τοῦ *om. Fa* 34 ἔλεγον *a* 38 χρόνον *a* 44 ἐγγχρόνιον *E* 45 ἐν
χρόνῳ *E* 46 ὁ *om. E*

numbered do so, but time both comes to be and passes away continuously. And it is necessary that all the parts of a number exist (for if the three units do not [all] exist, neither will the group of three), but for time this is impossible; for the earlier and the later time would exist simultaneously. Moreover, if time is number, the unit and the instant will be the same thing. For time is made up of instants,³ and number [is made up] of units.

He also raises the following difficulty: why is time the number of the earlier and later in change, more than of that in rest? For the earlier and later are present in this too in a similar way. But it is easy to solve this from what has been said already. For Aristotle was saying that time is the measure of the flow in coming-to-be, which is common to change and to the rest that is opposed to it, and of the being [that is] in all things that come to be.⁴ And he said that time is a number, not because it is number without qualification (for he shows that time is continuous, like magnitude and change) but because it is recognised by the distinction between the earlier and later in the continuity by those [beings] that are able to perceive time. So the objections from [the nature of] number do not in any way disturb Aristotle's conceptions.

[Strato] appears to raise a good objection against the expression "to be in time." "If," he says, "being in time is being included within time, it is clear that none of the eternal things will be in time." But it seems that Aristotle says that what exists in the whole of time is everlasting, rather than in time, because it is not included within time.⁵ May it not however be that, if everlasting time has its being in always coming to be, and what is everlasting in time is like the movement of the heaven, so that it is "always" in that it goes on to infinity, then it is true to say that every time one takes is included within another time?⁶

Strato raises many other objections to Aristotle's exposition, and himself asserts that time is the quantitative [aspect] of

³ Aristotle compares the instant to the unit at *Physics* 4.11 220a4, misleadingly (see Ross 1936, 601), because for him time is not composed of instants (*Physics* 4.10 218a8).

⁴ Simplicius as a Neoplatonist distinguishes between the level of coming-to-be, to which both change and the rest opposed to it belong, and the higher level of being, to which neither change nor this sort of rest applies. But Aristotle himself says that eternal things are not in time (*Physics* 4.12 221b3).

⁵ *Physics*, loc. cit.

⁶ Because the infinite is that which always has something beyond it.

ποσὸν εἶναι τίθεται· “πολλὸν γάρ, φησί, χρόνον φαμέν
 ἀποδημεῖν καὶ πλεῖν καὶ στρατεύεσθαι καὶ πολεμεῖν καὶ
 ὀλίγον χρόνον, ὁμοίως δὲ καθῆσθαι καὶ καθεύδειν καὶ
 p.790 μηθὲν πράττειν καὶ πολὺν χρόνον φαμέν καὶ ὀλίγον· ὦν 55
 μὲν ἔστι τὸ ποσὸν πολὺ, πολὺν χρόνον, ὦν δὲ ὀλίγον,
 ὀλίγον· χρόνος γὰρ τὸ ἐν ἐκάστοις τούτων ποσόν. διὸ καὶ
 φασιν οἱ μὲν βραδέως ἦκειν οἱ δὲ ταχέως τὸν αὐτόν, ὥς ἂν
 ἐκάστοις φαίνηται τὸ ἐν τούτοις ποσόν. ταχὺ μὲν γὰρ εἶναί
 φαμεν, ἐν ᾧ τὸ μὲν ποσὸν ἀφ’ οὗ ἤρξατο καὶ εἰς ὃ 60
 ἐπαύσατο ὀλίγον, τὸ δὲ γεγονὸς ἐν αὐτῷ πολὺ· τὸ βραδὺ δὲ
 τούναντίον, ὅταν ἦ τὸ μὲν ποσὸν ἐν αὐτῷ πολὺ, τὸ δὲ
 πεπραγμένον ὀλίγον. διό,” φησίν, “οὐκ ἔστιν ἐν ἡρεμίᾳ τὸ
 ταχὺ καὶ τὸ βραδὺ· πᾶσα γὰρ ἴση ἔστι τῷ ἑαυτῆς ποσῷ καὶ
 οὔτε ἐν ὀλίγῳ τῷ ποσῷ πολλὴ οὔτε ἐν πολλῷ βραχεῖα. διὰ 65
 τοῦτο δέ, φησί, καὶ πλείω μὲν εἶναι καὶ ἐλάττω χρόνον
 λέγομεν, θάττω δὲ καὶ βραδύτερον χρόνον οὐ λέγομεν.
 πρᾶξις μὲν γὰρ καὶ κίνησις ἔστι θάττων καὶ βραδυτέρα, τὸ
 δὲ ποσὸν τὸ ἐν ᾧ ἢ πρᾶξις οὐκ ἔστι θάττων καὶ
 βραδύτερον, ἀλλὰ πλέον καὶ ἔλαττον ὥσπερ καὶ χρόνος. 70
 ἡμέρα δὲ καὶ νύξ, φησί, καὶ μὴν καὶ ἐνιαυτὸς οὐκ ἔστι
 χρόνος οὐδὲ χρόνου μέρη, ἀλλὰ τὰ μὲν ὁ φωτισμὸς καὶ ἡ
 σκίασις, τὰ δὲ ἡ τῆς σελήνης καὶ τοῦ ἡλίου περίοδος, ἀλλὰ
 χρόνος ἔστι τὸ ποσὸν ἐν ᾧ ταῦτα.” ἀλλ’ εἰ ἕτερον μὲν τὸ
 πεπραγμένον, ἕτερον δὲ τὸ ποσὸν ἐν ᾧ πέπρακται καὶ 75
 τοῦτό ἐστιν ὁ χρόνος, ὅτι μὲν ποσόν, εἴρηται, ὁποῖον δὲ
 ποσόν, ἄδηλον. διὸ οὐδὲ ἔστιν ἀπὸ τούτου ἔννοιαν τοῦ
 χρόνου λαβεῖν τὸν μὴ προειληφότα. καὶ ὅτι μὲν ἔστι τι
 ἕτερον ποσὸν παρὰ τὸ τῶν κινήσεων καὶ ἡρεμιῶν ἴδιον,
 δῆλον, εἴπερ πολλήν κίνησιν ἐν ὀλίγῳ χρόνῳ γίνεσθαι 80
 φαμεν, ὅταν ταχεῖα ἦ, ὀλίγην δὲ ἐν πολλῷ, ὅταν βραδεῖα· τί
 δὲ τοῦτό ἐστιν, οὐ διεσάφησεν ὁ λόγος. “διὰ τοῦτο δέ,”
 φησί, “πάντα ἐν χρόνῳ εἶναί φαμεν, ὅτι πᾶσι τὸ ποσόν
 ἀκολουθεῖ καὶ τοῖς γινομένοις καὶ <τοῖς> οὔσι. πολλὰ δὲ
 κατὰ τὸ ἐναντίον λέγομεν· τὴν γὰρ πόλιν ἐν ταραχῇ εἶναι 85
 καὶ τὸν ἄνθρωπον ἐν φόβῳ καὶ ἡδονῇ, ὅτι ταῦτα ἐν

52 πολλὸν Wehrli, qui Dielsium πολλὴν lapsu calami scripsisse censet 53 καὶ
 πλεῖν om. E 53–54 καὶ ὀλίγον χρόνον om. Fa 57 τοῦτο E 58 τὸν αὐτόν
 post ἦκειν non post ταχέως collocat E 69 τὸ om. E 71 μὴν καὶ E: om. Fa 73
 ἡ τοῦ ἡλίου Fa 75 πεπραγμένον Ueberweg: πεπερασμένον libri 77 τοῦ om.
 E 81 ἢ om. E 84 καὶ τοῖς οὔσι “bene Laur. 85.1” Diels

actions. "For," he says, "we say that we go abroad or sail or go on a military campaign or wage war for much time or for little time, and similarly that we sit and sleep and do nothing for much time
p.790 and for little time: for much time in the cases where the quantity is much, for little where it is little. For time is the quantitative [aspect] in each of these. And this is why some people say that one and the same [time] came slowly, others quickly, according to how the quantitative [aspect] in this seems to each group. For we say that that is quick in which the quantity from when it began to when it stopped is small, but much happened in this [interval]. Slow is the opposite, when the quantity in it is much, but what has been done little. And for this reason," he says, "there is no quick and slow in rest; for all [rest] is equal to its own quantity, and nether much in a small quantity or short in a large one. And this," he says, "is why we speak of more and less time, but not of quicker or slower time. For an action and a change can be quicker and slower, but the quantity in which the action is is not quicker and slower, but more and less, like the time. Day and night," he says, "and month and year are not time or parts of time, but the former are light and dark, the latter the circuit of the moon and sun, while time is the quantity in which these are." However, if what is accomplished is one thing, the quantity in which it is accomplished another, and the latter is time, then it has been stated that [time] is a quantity, but it is unclear what sort of quantity. And for this reason it is not possible to derive the notion of time from this if one has not already acquired it previously. That it is some quantity other than that which is proper to changes and instances of rest is clear, if we say that much change happens in little time, when it is quick, and little in much, when it is slow. But what this is, the account has not made clear. "And the reason," he says, "why we say that all things are in time, is that quantity accompanies all things that come to be and are. But in many cases we speak in the opposite way; for we say that the city is 'in' turmoil and the man 'in' panic or pleasure, because the latter are in the former."⁷

⁷ It is not clear whether the last sentence, "But in many cases . . . in the former," is part of the quotation from Strato, or an objection by Simplicius.

88 **Strato of Lampsacus**

ἐκείνοις.” ταῦτα μὲν οὖν καὶ τὰ τοῦ Στράτωνος ὡς συντόμως ἀπομνημονεῦσαι περὶ χρόνου δοξάσματά τε καὶ ἀπορήματα· καὶ πάντες οἱ εἰρημένοι περὶ τὸν φυσικὸν χρόνον διέτριψαν, κἄν ἐνεδείξαντό τινες αὐτῶν περὶ τοῦ χωριστοῦ καὶ ἐξηρημένου καὶ ἐν αἰτίας λόγῳ προεστη-
κότος χρόνου.

87 καὶ *om. E* 90 τινος *a* 92 χρόνου *om. F*

32 **Simplicius, In Aristotelis Physica, Corollarium De tempore (CAG t.9 p.800.16–21 Diels 1882)**

ἐκ δὲ τούτων τῶν λύσεων καὶ τὰς τοῦ Στράτωνος ἀπορίας περὶ τοῦ μὴ εἶναι τὸν χρόνον διαλύειν δυνατόν καὶ αὐτὰς <τὰς> τῷ ᾿Αριστοτέλει διεσκεδασμέναις καὶ τὸ νῦν ἐνεργεῖα λαμβανούσας. ἀλλ’ ὅτῳ ταῦτα πρὸς διάλυσιν μὴ ἀρκεῖ τῶν εἰρημένων, ἐντυγχανέτω τῷ τοῦ φιλοσόφου Δαμασκίου
Περὶ χρόνου συγγράμματι.

2 αὐτὰς *a*: αὐτὸς *F* 3 τὰς *add. Diels* τῷ] τῶν *F*: τὰς *a* ᾿Αριστοτέλει *Diels*: ᾿Αριστοτέλους *a*: *per compend. F*

33 **Stobaeus, Eclogae 1.8.40b (p.102.17–103.8 Wachsmuth 1884)**

Πυθαγόρας τὴν σφαῖραν τοῦ περιέχοντος.
Ἐρατοσθένης τὴν τοῦ ἡλίου πορείαν.
οἱ Στωικοὶ χρόνου οὐσίαν αὐτὴν τὴν κίνησιν.
οἱ πλείους ἀγένητον τὸν χρόνον.
Ξενοκράτης μέτρον τῶν γενητῶν, καὶ κίνησιν αἰδίδιον.
p.103 μέτρον βραδύτητος ἢ τάχους εἶπε Χρύσιππος.
Ἐστιαῖος ὁ Περίνθιος φυσικὸς φορὰν ἄστρον πρὸς ἄλληλα.
Στράτων τὸ ἐν κινήσει καὶ ἡρεμίᾳ ποσόν.
Ἐπίκουρος σύμπτωμα <συμπτωμάτων>, τοῦτο δ’ ἐστὶ παρακολούθημα κινήσεων.
Ἀντιφῶν καὶ Κριτόλαος νόημα ἢ μέτρον τὸν χρόνον, οὐδ’

Well, these are Strato's views and problems about time, to record them briefly. And all the people who have been mentioned occupied themselves with natural time, even if some of them gave indications about the time which is se-parate and transcendent and is prior in rank as being a cause.

- 32** Simplicius, *On Aristotle's Physics, Corollary On time* (CAG vol.9 p.800.16–21 Diels 1882)

On the basis of these solutions it is also possible to solve Strato's difficulties concerning the non-existence of time, and those too which have been spread around by Aristotle and take the instant as [existing in] actuality. But whoever is not satisfied with these for solving the [difficulties] that have been stated, should consult the treatise *On Time* of the philosopher Damascius.

- 33** Stobaeus, *Selections* 1.8.40b (p.102.17–103.8 Wachsmuth 1884)¹

Pythagoras [said that time is] the sphere of what surrounds [the world].

Eratosthenes, the course of the sun.

The Stoics, that motion itself is the being of time.

Most people, that time is ungenerated.

Xenocrates, that it is the measure of generated things, and eternal motion.

- p.103 Chrysippus said [that it is] the measure of slowness or quickness. Hestiaeus of Perinthus, the natural philosopher,² [that it is] the relative movement of the stars.

Strato, [that it is] the quantitative [aspect] in change and rest.

Epicurus, [that it is] an accident <of accidents>, that is an accompaniment of changes.

Antiphon and Critolaus that time is a concept or a measure, not

ὑπόστασιν.

1–2 *Aëtius*, 1.21.1 et 3 *Diels* (DG p.318b4–5 et 8–9): [*Plutarchus*], *De placitis epitome* 1.21 (DG p.318a4–5 et 8–9 *Diels*): *vide infra* 3 SVF 2.514 3–4 *Aëtius*, 1.22.7–8 *Diels* (DG p.318b23–25): [*Plutarchus*], *De placitis epitome* 1.22 (DG p.318a24–26 *Diels*): *vide infra* 5 *Xenocrates*, fr.159 *Isnardi Parente*: *Aëtius*, 1.22.2 (DG 318b13–14 *Diels*) 6 *Arius Didymus*, fr. phys. 26 *Diels* (DG p.461.23–24) = *Stobaeus*, *Ecl.* 1.42 p.106.5–7 *Wachsmuth* = SVF 2.509 7–13 *Aëtius*, 1.22.3–6 *Diels* (DG 318b15–23) 7–8 *Hestiaeus*, F3 (p.105) *apud Lasserre* 1987 12–13 *Antiphon*, B9 DK; *Critolaus*, fr.14 *Wehrli*

1 *ante* Πυθαγόρας *titulum* Περί χρόνου *inseruit* *Diels* 1–2 *ante* Ἐρατοσθένης *inseruit ex* [*Plutarcho*] *Diels* Πλάτων αἰῶνος εἰκόνα κινήτην ἢ διάστημα τῆς τοῦ κόσμου κινήσεως 3 *post* πορείαν *titulum* Περί οὐσίας χρόνου *inseruit* *Diels* 3–4 οἱ Στωικοὶ—χρόνον *post* ὑπόστασιν (14) *transfert et hoc loco* (Πλάτων) οὐσίαν [[δὲ]] χρόνου τὴν οὐρανοῦ κίνησιν *ex* [*Plutarcho*] 1.22 (DG p.318a9–10) *inseruit* *Diels* (*Aëtius* 1.22.1, DG p.318b11–12) 3 οἱ πλείους τῶν Στωικῶν αὐτὴν τὴν κίνησιν [*Plutarchus*] 4 οἱ μὲν πλείους [*Plutarchus*] ἀγέννητον *FP et* [*Plutarchi*] *codd.* BC 5 γεννητῶν *P* 7 φυσικὸς *post* Στράτων (9) *transponendum coni.* *Krische* 9 τὸ *P*²: τὸν *FP*¹: τῶν *ed.* *plerique* 10 συμπτωμάτων *add.* *Heeren ex Sexto Empirico M.* 10.238 12 Ἀντιφῶν *F Diels*: Ἀντιφάν *Wachsmuth*: Ἀντιφάνης *C, F mg., P lemm.*: Ἀριστοφάνης *P*

34 Simplicius, In Aristotelis Categorias 9 11b10 (CAG t.8 p.346.12–25 Kalbfleisch 1907)

καὶ κατὰ τὰς παλαιὰς δὲ δόξας ἡ αὐτὴ ἔννοια φαίνεται τοῦ χρόνου· ἡ γὰρ κίνησιν ἢ κινήσεώς τι ἦτοι χωριστὸν ἢ ἀχώριστον τὸν χρόνον ὑπολαμβάνουσιν. Στράτων μὲν γὰρ τὸ ποσὸν τῆς κινήσεως εἰπὼν τὸν χρόνον ἀχώριστόν τι αὐτὸν ὑπέθετο τῆς κινήσεως, Θεόφραστος δὲ συμβεβηκός 5 τι καὶ Ἀριστοτέλης ἀριθμὸν εἰπὼν ὡς χωριστὸν ἔθε-
 ἄσαντο· ἡνίκα δὲ ἕξιν ἢ πάθος κινήσεως λέγει, ὡς ἀχωρίστῳ καὶ αὐτὸς ἐχρήσατο. ἀλλὰ τούτων μὲν ὡς διὰ τὸ ἀκριβὲς τὴν εἰσαγωγικὴν πραγματείαν ὑπερβαίνοντων οὐκ ἐφάπτεται νῦν, τὸ μέντοι συνεχῇ καὶ ποσὸν εἶναι τὸν 10 χρόνον ὡς κοινὸν ἀξίωμα λαμβάνει. ἀριθμὸν δὲ αὐτὸν οὐ τὸν τῶν μονάδων εἶπεν, ἀλλ' ἀντὶ τοῦ μέτρου τῷ ἀριθμῷ κέχρηται· τὸ γὰρ μετρεῖν τῷ ἀριθμεῖν οὐ ταυτόν. μέτρον δὲ ἐστὶν τοῦ ἐν τῇ κινήσει προτέρου καὶ ὑστέρου, ὅποια ποτὲ ἂν ἡ κίνησις, εἴτε κατὰ γενέσειν καὶ φθορὰν εἴτε κατὰ 15 αὐξήσιν καὶ μείωσιν εἴτε κατὰ ἀλλοίωσιν εἴτε κατὰ τὴν

a real existent.

¹ In the case of this text I have included a considerable amount of material in order to highlight the extent to which what one reads in *Doxographi Graeci*, even in the “Stobaeus” column, is Diels’ rearrangement, not the transmitted text of Stobaeus as printed here. Diels inserts a reference to Plato in his Stobaeus column between those to the Pythagoreans and Eratosthenes, and inserts a heading “On Time” before the reference to the Pythagoreans and one “On the Being of Time” after that to Eratosthenes. He transfers the reference to the Stoics and to “most people” to follow that to Antiphon and Critolaus, and inserts in its place a similarly worded reference to Plato; all this reflects pseudo-Plutarch. He also omits the reference to Chrysippus, as coming from Arius Didymus. The result is that the reference to Strato, itself present only in Stobaeus and not in pseudo-Plutarch, appears under a chapter title, and in a sequence of reports, which reflects pseudo-Plutarch rather than Stobaeus; Diels’ annotation on the passage is not extensive, and the unwary might not realise the extent of the rearrangement. Diels’ reconstruction of the original sequence in Aëtius may be correct, but that does not alter the potentially misleading nature of the way in which he presents the text of Stobaeus.

² Pupil of Plato.

34 Simplicius, *On Aristotle’s Categories* 9 11b10 (CAG vol.8 p.346.12–25 Kalbfleisch 1907)

And according to the views of the ancients the concept of time appears the same; for they take time to be either change or something that belongs to change, either separable or inseparable. For Strato, saying that time is the quantitative [aspect] of change, supposes that it is something inseparable from change, while Theophrastus, saying that it is some accident [of change], and Aristotle, saying that it is the number [of change], considered it as separable. But when [Aristotle] says that it is a condition or affection of change, he too treats it as inseparable. However, he does not deal with these matters now, since they go beyond an introductory treatment in the exactness [that they require], but he takes the fact that time is both continuous and a quantity as a common axiom. In calling it number he was not referring to [number] made up of units, but used “number” in place of “measure”; for measuring is not the same as numbering. Measure is of what is earlier and later in change, of whatever sort, whether in coming-to-be and passing-away or in growth and diminution or

κατὰ τόπον μεταβολήν.

3–8 *Theophrastus, fr.151A FHS&G* 6 *Aristoteles, Physica 4.11 219b1, 220a24*
7 *id. 4.14 223a18, cf. 8.1 251b28*

3 Στράτων *JLKA*: Πλάτων *v* 6 ὁ Ἀριστοτέλης *Av* 6–7 ἐθεάσατο *KAv* 7
ἔξιν *ex* ἔξεις *ut vid. corr. J* λέγει *K* 11 αὐτῶν *a* 12 τῶν *om. a* 13 τῷ] τὸ
K οὐ] *in marg.* ποῦ *b* 14 καὶ ὅποια *A* 16 καὶ μείωσιν *om. K*

35 Sextus, *Adversus Mathematicos* 10.176–80 (BT t.2 p.340.19–341.13 Mutschmann 1914)

Ἀριστοτέλης δὲ χρόνον ἔφασκεν εἶναι ἀριθμὸν τοῦ ἐν
κινήσει πρώτου καὶ ὑστέρου. εἰ δὲ τοῦτο ἐστὶν ὁ χρόνος,
συμνημόνευσις τις τοῦ ἐν κινήσει πρώτου καὶ ὑστέρου, τὸ
ἡρεμοῦν καὶ ἀκινήτιζον οὐκ ἔσται ἐν χρόνῳ. ἢ εἴπερ ἐστὶν
ἐν χρόνῳ τὸ ἀκινήτιζον, ὁ δὲ χρόνος ἐστὶν ἀριθμὸς τοῦ ἐν
κινήσει πρώτου καὶ ὑστέρου, ἔσται τὸ ἐν χρόνῳ ἡρεμοῦν
καὶ κινούμενον· ὅπερ ἀδύνατον. διόπερ Στράτων ὁ φυσικὸς
ἀποστὰς τῆσδε τῆς ἐννοίας ἔλεγε χρόνον ὑπάρχειν μέτρον
πάσης κινήσεως καὶ μονῆς· παρήκει γὰρ πᾶσι τοῖς κινου-
μένοις, ὅτε κινεῖται, καὶ πᾶσι τοῖς ἀκινήτοις, ὅτε ἀκινήτιζ-
ει, καὶ διὰ τοῦτο πάντα τὰ γινόμενα ἐν χρόνῳ γίνεται.
μήποτε δὲ πάμπολλά ἐστὶ καὶ τὰ τούτῳ μαχόμενα·
αὐταρκες δὲ νῦν ἐκεῖνο λέγειν, ὅτι τὸ μετροῦν τὴν κίνησιν
ἢ τὴν μονὴν ἐν χρόνῳ γίνεται καὶ οὐκ ἔστι χρόνος. εἰ δὲ
τοῦτο, οὐκ ἂν εἴη τὸ μετροῦν τὴν κίνησιν καὶ τὴν μονὴν ὁ
χρόνος· ἐν χρόνῳ γὰρ οὐ γίνεται χρόνος. ἄλλως τε· εἰ διὰ
τοῦτο μέτρον τῆς κινήσεως καὶ τῆς μονῆς ἐστὶν ὁ χρόνος,
ἐπεὶ ἀντιπαρήκει τῇ τε κινήσει ἐφ' ὅσον ἐστὶ κίνησις καὶ τῇ
μονῇ ἐφ' ὅσον ἐστὶ μονή, ἐπεὶ πάλιν ἡ κίνησις καὶ ἡ μονή
ἀντιπαρήκει τῷ χρόνῳ, οὐ μᾶλλον ἔσται χρόνος μέτρον τῆς
κινήσεως καὶ τῆς μονῆς ἢ ἡ κίνησις καὶ ἡ μονή μέτρον τοῦ
χρόνου. καὶ τοῦτο τάχα βέλτιον ἦν εἰπεῖν· ὁ μὲν γὰρ
χρόνος δυσθεώρητον τι ἐστίν, ἡ δὲ κίνησις καὶ ἡ μονή
εὐσύνοπτον, ληφθεῖη δ' ἂν οὐκ ἐκ τοῦ δυσθεωρήτου τὸ
εὐθεώρητον, ἀλλ' ἀνάπαλιν.

1–2 *Sextus, PH 3.136 (t.1 p.171.9–10 Mutschmann) et M 10.228 (t.2 p.350.30–351.1 Mutschmann)*, *Aristotele utrobique nominato* 7–9 *Sextus, PH 3.137 (t.1 p.171.10–11 Mutschmann) et M 10.228 (t.2 p.351.1–2 Mutschmann)*, *Stratone utrobique nominato*

→

in alteration or in respect of change in place.

35 Sextus, *Against the Professors* 10.176–80 (*BT* vol.2 p.340.19–341.13 Mutschmann 1914)

Aristotle said that time is the number of the earlier and later in change. If this is time, [namely] some simultaneous recollection of the earlier and later in change, what is at rest and unchanging will not be in time. Or if what is unchanging is in time, but time is the number of the earlier and later in change, what is at rest
 177 in time will also be changing, which is impossible. For this reason Strato the natural philosopher, abandoning this concept, said that time is the measure of every change *and rest*; for it extends alongside all things that change, when they are changing, and all the unchangeable things, when they are unchanging, and for this reason all things that come to be do so in time.

178 But there may be very many things that conflict with this too.
 p.341 It is sufficient for now to mention that what measures change and rest occurs *in* time and is not time. If so, what measures change
 179 and rest will not be time; for time does not occur in time. Alternatively: if time is the measure of change and rest because it extends alongside change in so far as there is change, and rest in so far as there is rest, [then] since conversely change and rest extend alongside time, time will no more be the measure of rest and change
 180 than change and rest will be the measure of time. And perhaps it would be better to say the latter; for time is something that is difficult to contemplate, but change and rest are easy to observe, and what is easy to contemplate will not be grasped on the basis of what is hard to contemplate, but vice versa.

3 τις *om.* ζ 8 τῆσδε τῆς *LE*ζ : τῆς αὐτῆς *N* 10 ἀκινήτοις *Fabricius*: κινήτοις
G 11 τὰ *om.* *N* 14–16 εἰ—μονὴν ὁ χρόνος *om.* *E* 15 ὁ *N*: *om.* *LE*ζ 16 καὶ
 ἐν χρόνῳ *N* 24 λειφθεῖν *N*

- 36** Sextus Empiricus, *Adversus mathematicos* 10.155 (BT t.2 p.336.7–16 Mutschmann 1914)

Λείπεται τοίνυν σκοπεῖν, εἰ δύναται κινεῖσθαι τι, τινῶν μὲν εἰς ἄπειρον τεμνομένων, τινῶν δὲ εἰς ἀμερὲς καταληγόντων. καὶ δὴ οὕτως ἡνέχθησαν οἱ περὶ τὸν Στράτωνα τὸν φυσικόν· τοὺς μὲν γὰρ χρόνους εἰς ἀμερὲς ὑπέλαβον καταλήγειν, τὰ δὲ σώματα καὶ τοὺς τόπους εἰς ἄπειρον τέμνεσθαι, κινεῖσθαι τε τὸ κινούμενον ἐν ἀμερεῖ χρόνῳ ὅλον ἄθρουν μεριστὸν διάστημα καὶ οὐ κατὰ τὸ πρότερον πρότερον.

3 τὸν *del.* Rüstow 8 πρότερον *semel tantum* N

- 37** Damascius, *In Platonis Parmenidem* 389 (CB t.3 p.182.18–183.18 Westerink 2002)

εὐλαβητέον ἄρα τὸ ἐξ ἀμερῶν εἶναι τὸν χρόνον. τί οὖν; οὐδὲ συνεχῆς ἐστὶ καὶ διωρισμένος, ὥς ἀποδείκνυσιν; πάνυ γε, φήσω, ἀλλ' οὐκ ἐκ μερῶν ἀμερῶν, ἀλλ' ἐκ διαστατῶν διωρισμένων συγκείμενος. ἔστιν γὰρ σύνθετος, ὥς φησι Στράτων, ἐκ μερῶν μὴ μενόντων, ταύτη οὖν ἐκ διωρισμένων· ἕκαστον δὲ μέρος συνεχές ἐστὶ, καὶ οἷον p.183 μέτρον ἐστὶν ἐκ πολλῶν μέτρων· ἐδείκνυμεν γὰρ καὶ ἐν τοῖς εἰς Τίμαιον ὅτι οὐ κατὰ τὰ νῦν προκόπτει ὁ χρόνος· οὐδὲ γὰρ ἂν προέκοψεν, ἀπείρων ὄντων αἰεὶ τῶν νῦν. ἀλλ' ὥσπερ ἡ κίνησις προκόπτει διαστηματικῶς, ἀλλ' οὐ κατὰ σημεῖον, ἀλλ' οἷον κατὰ ἄλματα, ὥς ἔλεγε καὶ Ἀριστοτέλης, οὕτως ἀνάγκη καὶ τὸν χρόνον κατὰ μέτρα ὅλα προβαίνειν ἅ μετρητικὰ τῶν ἀλμάτων γίγνεται τῆς κινήσεως. οὕτως ἄρα ἐκ μέτρων ὁ χρόνος· ἀλλὰ μέτρων πέρασι διειλημμένων καὶ διωρισμένων. διὸ καὶ ὁ Παρμενίδης τὸν χρόνον παρήγαγεν μετὰ τὸ συνεχές πηλίκον καὶ τὸ διωρισμένον πλήθος, ὅτι καὶ αὐτὸς ὥς ἐκ μέτρων τε καὶ μερῶν, συνεχῆς τέ ἐστὶ καὶ διωρισμένος. ἀλλ' οὕτω, φαίη τις ἂν, καὶ ἡ κίνησις ἔσται συνεχῆς καὶ διωρισμένη, ὅτι οὐδὲ ταύτης τὰ μέρη μένει. ἢ ἀληθὲς τοῦτό ἐστι· συνεχίζεται γὰρ ὑπὸ τοῦ σώματος ἐφ' οὗ τε καὶ οὐ ἡ

- 36** Sextus Empiricus, *Against the Professors* 10.155–58 (BT vol.2 p.336.7–16 Mutschmann 1914)

It remains then to consider whether it is possible for anything to move¹ if some things are infinitely divisible while [the division] of others stops at partless [minima]. And this indeed was the inclination of the followers² of Strato the naturalist. For they supposed that [the division] of times stopped at partless [minima], while bodies and places were infinitely divisible, and that what moves moves in a partless time over a whole divisible interval all together, not through the first [part] first.

¹ Or “change”; but here “move” seems more appropriate (and Sextus goes on to give a refutation in terms of locomotion).

² As often, this expression may just be a way of referring to Strato himself.

- 37** Damascius, *On Plato's Parmenides* 389 (CB vol.3 p.182.18–183.18 Westerink 2002)

One must then avoid time being [composed] of [parts that are themselves] without parts. What then? Is [time] not continuous, but discrete, as he shows? Certainly, I will say, but it is composed not of parts that have no parts, but of discrete intervals. For it is composed, as Strato says, of parts that do not remain,¹ and in this way it is [composed] of [parts] that are discrete; but each part is
p.183 continuous, and as it were a measure composed of many measures. For we showed also in our [commentary] on the *Timaeus* that time does not advance by instants; for it would not advance, since the instants are always infinite. But just as motion advances by intervals, not by a point, but as it were by jumps, as Aristotle too said,² just so it is necessary that time too should advance by whole measures, which measure the jumps of the motion. So in this way time is [composed] of measures; but of measures that are distinguished by limits and discrete. And this is why Parmenides³ too introduced time after continuous quantity and discrete plurality, because [time] too itself, being [composed] of measures and parts, is both continuous and discrete. But, someone might say, motion too will in this way be continuous and discrete, because its parts do not remain either. Rather, the truth is this; [motion] is held together by the body over which and of which the motion is,

κίνησις, διακοπτομένη δὲ διορίζεται τοῖς ἑαυτῆς ἄλμασιν·
τὸ δὲ ἀληθῶς συνεχὲς τὸ μέγεθός ἐστιν οὐ καὶ ἡ συνέχεια
ὅλη ὁμοῦ οὔσα παραιτεῖται τὸν διορισμόν.

15–16 ὁ Παρμενίδης] *i.e.* Plato, Parmenides 151e

13 μετρητικά *cod. Paris. gr. 1899*: μετρητικατά, α (*alt.*) *puncto notatum*, A
14–15 μέτρων . . . διειλημμένων καὶ διωρισμένων *Westerink*: μέτρον . . .
διειλημμένον καὶ διωρισμένον A

De motu

38A Simplicius, In Aristotelis Physica 4.11 219a10–14 (CAG t.9
p.710.33–711.13 Diels 1882)

Καὶ ὁ Εὐδημος δὲ ἐν τῷ τρίτῳ τῶν Φυσικῶν τὴν αὐτὴν
ἔχων γνώμην φαίνεται, ὅτι διὰ μὲν τὸ μέγεθος ἡ κίνησις
συνεχῆς, διὰ δὲ τὴν κίνησιν ὁ χρόνος, γράφων οὕτως·
p.711 “ἀναλαβόντες δὴ πάλιν λέγωμεν, ὅτι τῶν συνεχῶν ὁ
χρόνος εἶναι δοκεῖ καὶ τῶν μεριστῶν· οὐκοῦν καὶ ἡ κίνησις 5
τε καὶ τὸ μῆκος· τίς οὖν τούτων ἀρχὴ καὶ τίνι πρώτως
ὑπάρχει ταῦτα; ἄρ’ οὖν τῷ μὲν μήκει καὶ τῷ σώματι καθ’
αὐτὰ φαίνεται ταῦτα ὑπάρχειν; οὐ γὰρ τῷ εἶναι τι αὐτῶν
οὐδὲ τῷ τοιαῦτα εἶναι μερίζεται καὶ συνεχῇ ἐστιν. ἡ δὲ
κίνησις τῷ ἐπὶ τοῦ μήκους εἶναι συνεχῆς τε καὶ μεριστῇ 10
φαίνεται, συνεχῆς μὲν τῷ ἐπὶ συνεχοῦς εἶναι, μεριστῇ δὲ
τῷ διαιρεῖσθαι ὥσπερ τὸ μῆκος· ὅτι γὰρ ἂν ληφθῇ τοῦ
μήκους μόνιον, τοῦτο καὶ τῆς κινήσεώς ἐστιν. ὁμοίως δὲ
καὶ τοῦ χρόνου· ὥς γὰρ ἡ κίνησις, οὕτω καὶ τὸν χρόνον
οἰόμεθα μερίζειν.” ὁ δὲ Λαμψακηνὸς Στράτων οὐκ ἀπὸ τοῦ 15
μεγέθους μόνον <συνεχῇ> τὴν κίνησιν εἶναι φησιν, ἀλλὰ
καὶ καθ’ ἑαυτήν, ὥς εἰ διακοπεῖ, στάσει διαλαμβανομένην,
καὶ τὸ μεταξὺ δύο στάσεων κίνησιν οὔσαν ἀδιάκοπον. “καὶ
ποσὸν δέ τι, φησίν, ἡ κίνησις καὶ διαιρετὸν εἰς αἰ

but it is broken up and made discrete by its own jumps. What is truly continuous is the magnitude of which the continuity, being all together as a whole, makes the division unnecessary.

¹ Sorabji 1983, 378 suggests that it is *only* the first part of this sentence that reflects Strato's view. Cf. Schmidt 1962, 220.

² Aristotle *denies* this at *Physics* 6.1 232a8 and 6.10 241a4. Sambursky and Pines 1971, 112 suggest that Damascius is citing Aristotle only for the *term* "jump," which Aristotle uses in a quite different context at *Meteorology* 1.6 343b23. — In the present context "motion" seems a more appropriate translation for *kinesis* than does "change."

³ I.e., the character Parmenides in Plato's dialogue, 151e.

Motion

38A Simplicius, *On Aristotle's Physics* 4.11 219a10–14 (CAG vol.9 p.710.33–711.13 Diels 1882)

Eudemus too in the third book of his *Physics* clearly holds the same view, that motion is continuous because of the distance¹ [over which it takes place], and that time [is continuous] because motion [is]. He writes as follows: "Let us resume [the topic] again, and say that time seems to be both [one] of the things that are continuous and [one] of those that are divided into parts;² so both change and length [are too]. Which of these then is the starting-point and which has these attributes in a primary way? Well, do these things not seem to belong *per se* to length and to body? For it is not because of some feature they possess, or because they are of a certain sort, that they are divided into parts and are continuous. But motion is clearly both continuous and divided into parts because it [takes place] over a length; it is continuous because it [takes place] over something continuous, but it is divided into parts because it is divided in the same way as the length. For whatever part of the length is taken, this is also [a part] of the motion. And similarly of time; for we think that we divide the time into parts in the same way as the motion." But Strato of Lampsacus says that motion is continuous not only from the distance,³ but also in itself, as when⁴ it is interrupted, being divided by an [instance of] rest, and motion that is between two [instances] of rest being uninterrupted. "And motion," he says, "is a certain quantity and is divisible into [parts] that are divisible at

διαιρετά.”

20

1–15 *Eudemus*, fr.85 *Wehrli*

1 δὲ *om. Fa* 4 λέγωμεν *Fa*: λέγομεν *E* τῶν *om. E* 10 τοῦ *om. a* 14 τὴν
κίνησιν *Brandis* 15 μερίζεσθαι *coni. Diels* 16 μόνου *F* συνεχῆ *a*: *om.*
EF 17 διαλαμβανομένην *Zeller*: διαλαμβανομένη *libri* 18 στάσεων *EF*:
διαστάσεων *a*

38B *Simplicius*, In *Aristotelis Physica* 4.11 219a10–14 (CAG t.9 711.28–712.3 *Diels* 1882)

ἀλλὰ μὴδὲ τοῦτο παρῶμεν προσθεῖναι τοῖς ζητουμένοις,
ὅτι ὁ ἀπὸ τοῦ μεγέθους, ἐφ’ οὗ ἡ κίνησις, τὴν συνέχειαν ἐπὶ
τὴν κίνησιν καὶ τὸν χρόνον μεταφέρων λόγος καὶ ἐκ ταύτης
τὴν εὑρεσιν τῆς οὐσίας τοῦ χρόνου ποιούμενος μόνην
κίνησιν τὴν κατὰ τόπον λαμβάνει. αἱ γὰρ ἄλλαι κινήσεις
οἷον ἀλλοίωσις αὐξήσις μείωσις γένεσις φθορὰ μεγεθῶν
μὲν ἔστωσαν κινήσεις, οὐ μέντοι ἐπὶ μεγεθικοῦ
διαστήματος γίνονται· ὥστε καὶ χρόνον οὐ πάντα, ἀλλὰ
μόνον ἐκεῖνον τὸν τῇ κατὰ τόπον κινήσει συνόντα εὐρίσκει
ὁ λόγος. ἀλλ’ ὁ μὲν Ἀριστοτέλης ἔοικεν ἐκ τοῦ
σαφεστερου ποιήσασθαι τὴν ἐπιβολήν, ὁ δὲ Στράτων
p.712 φιλοκάλως καὶ αὐτὴν καθ’ αὐτὴν τὴν κίνησιν ἔδειξε τὸ
συνεχὲς ἔχουσαν· ἴσως καὶ πρὸς τοῦτο βλέπων, ἵνα μὴ
μόνον ἐπὶ τῆς κατὰ τόπον κινήσεως, ἀλλὰ καὶ ἐπὶ τῶν
ἄλλων πασῶν συνάγῃται τὰ λεγόμενα.

2 ἐφ’ οὗ ἡ κίνησις *om. F* 5 κίνησιν *post* λαμβάνει *collocat a* 6 ἀλλοίωσις
Fa: ὁμοίωσις *E* φθορὰ ὅρα *E* 7 ἔστωσαν *EF*: εἰσι *a* 12 καὶ αὐτὴν *Fa*:
ἐαυτὴν *E* 13 τοῦτον *F*

39 *Simplicius*, In *Aristotelis Physica* 5.1 224a34–b6 (CAG t.10 p.806.28–807.7 *Diels* 1895)

τὸ δὲ εἶδος, φησί, καὶ ὁ τόπος καὶ τὸ μέγεθος οὔτε κινεῖ
οὔτε κινεῖται, ταύτην δηλονότι τὴν κίνησιν, ἣν τὸ εἰς αὐτὸ
μεταβάλλον κινεῖται· τὸ μὲν γὰρ ἀλλοιούμενον κινεῖται
κατὰ ἀλλοίωσιν. τὸ δὲ εἶδος, ἐφ’ ὃ κινεῖται τὸ ἀλλοι-

every stage.”

¹ Literally: the magnitude.

² Or “that can be divided”; the Greek verbal adjective is ambiguous between the two. But the English “are divided,” in a generalising context, may capture something of the same ambiguity.

³ Literally: the magnitude.

⁴ Literally: if.

38B Simplicius, *On Aristotle’s Physics* 4.11 219a10–14 (CAG vol.9 711.28–712.3 Diels)

But let us not omit to add this to the subjects of enquiry, that the argument that transfers continuity to the change¹ and the time from the magnitude² over which the change [takes place], and finds the essence of time from this, considers only change in place. The other changes, such as alteration, growth, diminution, coming-to-be and passing-away may indeed be changes in magnitudes, but they do not take place over an interval of a certain magnitude.³ So the argument finds not all time, but only that which accompanies change in place. Aristotle seems to have
p.712 approached [the question] from what is clearer, but Strato elegantly showed that change also possesses continuity in itself. Perhaps he had this in mind, that what is said should be applied not only to change in place, but also to all the others.

¹ Translated “motion” in **38A**. In the present passage however “change” seems more appropriate; Simplicius is indeed now pointing out that the argument in the first part of **38A** applies only to motion and not to other forms of change.

² Translated “distance” in **38A** where the reference was to motion, i.e. change in place, only. See the previous note.

³ Even growth is the growth of a whole body, so that a child’s growing from three to four feet in height, say, cannot simply be regarded as the top of its head moving one foot away from its previous position relative to the feet.

39 Simplicius, *On Aristotle’s Physics* 5.1 224a34–b6 (CAG vol.10 p.806.28–807.7 Diels 1895)

Form, [Aristotle] says, and place and magnitude neither change nor are changed, clearly [meaning] the change by which that is changed which is transformed into [the thing in question]. For what is altered is changed by alteration. But the form, into which

100 Strato of Lampsacus

p.807 ούμενον οἶον τὸ λευκόν, οὐ λευκαίνεται· ἀλλ' οὐδὲ τὸ ⁵
εἶδος, εἰς ὃ τὸ γινόμενον μεταβάλλει, γίνεται κατ' ἐκείνην
τὴν γένεσιν· γίνεται μέντοι μὴ πρότερον ὄν. καὶ καλῶς γε
οἶμαι ὁ Στράτων τὴν κίνησιν οὐ μόνον ἐν τῷ κινουμένῳ
φησὶν εἶναι, ἀλλὰ καὶ ἐν τῷ ἐξ οὗ καὶ ἐν τῷ εἰς ὃ, ἄλλον δὲ
τρόπον ἐν ἐκάστῳ· τὸ μὲν γὰρ ὑποκείμενον, φησί, κινεῖται ¹⁰
ὡς μεταβάλλον, τὸ δὲ ἐξ οὗ καὶ εἰς ὃ τὸ μὲν ὡς φθειρό-
μενον τὸ δὲ ὡς γινόμενον.

6 μεταβάλλει τὸ γινόμενον *Fa* 8 τὴν κίνησιν ὁ στράτων *C* 9 ἐν (*pr.*) *om. M*
11 καὶ τὸ εἰς *FMa* 11–12 φθειρόμενον *et* γινόμενον *transpos. C*

40 Simplicius, In Aristotelis Physica 5.6 230b21–28 (CAG t.10 p.916.4–30 Diels 1895)

ἐπειδὴ δὲ τοῦτο τὸ πρὸς τοῖς οἰκείοις τόποις θᾶττον
φέρεσθαι τὰ κατὰ φύσιν φερόμενα ὡς ἀξίωμα πάντες
προφέρουσι, καὶ τὴν μὲν αἰτίαν εὐλογον ἀποδιδόασιν
δυναμοῦσθαι λέγοντες αὐτὰ μᾶλλον πλησιάζοντα τῇ οἰκείᾳ
ὀλότητι ὡς τελειούμενα τότε μᾶλλον κατὰ τὸ εἶδος, ἄλλοι ⁵
δὲ τὸ πλῆθος τοῦ μεταξὺ ἀέρος ἐμποδίζειν λέγουσιν τοῖς
ἐπὶ τὸ ἄνω ἢ κάτω κινουμένοις, ἕως ἂν πλησιάζοντα τοῖς
οἰκείοις τόποις ὀλίγον ἀπολίπη τὸ μεταξύ, τὴν δὲ πίστιν
τοῦ οὕτως ἔχειν, ὅτι τὰ κατὰ φύσιν φερόμενα θᾶττον
κινεῖται πρὸς τοῖς οἰκείοις τόποις γινόμενα, ὀλίγοι ¹⁰
προστιθέασιν, οὐδὲν ἴσως κωλύει τὰ ὑπὸ τοῦ φυσικοῦ
Στράτωνος εἰρημένα τεκμήρια παραγράψαι. ἐν γὰρ τῷ
Περὶ κινήσεως οὕτως εἰπών, ὅτι τὴν ἐσχάτην τοῦ τόπου
ἐξαλλαγὴν ἐν ἐλαχίστῳ χρόνῳ ἐξαλλάσσει τὸ κινούμενον,
ἐπάγει· “ἐν μὲν οὖν τοῖς τῷ βάρει φερομένοις διὰ τοῦ ¹⁵
ἀέρος φανερόν ἐστιν οὕτω γινόμενον· τό τε γὰρ ἀπὸ τῶν

3–5 *Simplicius, In Aristotelis De caelo 264.22–25, Aristotele nominato*

1 τόποις γινόμενα *a* 2 *post* ἀξίωμα *rasum C* 4–5 αὐτὰ . . . πλησιάζοντα . . .
τελειούμενα *CM*: αὐτὸ . . . πλησιάζον . . . τελειούμενον *AFa* 7 πλησιάζωσι,
supra ω: ου, *F* 8 ἀπολίπη ὀλίγον *Fa* 11 οὐδ' ἴσως *F* 13 οὕτως *Aa*: οὗτος
F: *om. CM* ἐσχάτην τοῦ *CFM*: ἐσχατον *A*: τοῦ ἐσχάτου *a* 15 τῷ *ex* τὸ
fecit C

p.807 that changes which is altered — for example, white — does not [itself] become white; and neither does the form, into which that which comes-to-be is transformed, [itself] come to be in the course of that coming-to-be. But it does come to be, not having existed before.¹ And I think Strato spoke well when he said that change is not only in what changes, but also in that from which and in that into which [change takes place], but in a different way in each. For what underlies, he says, is changed by being transformed, but that from which and that into which [are changed] in the one case by passing away and in the other by coming to be.

¹ That is to say, it comes to be without going through a *process* of coming to be. Aristotle, *Metaph.* H 4 1043b14–18.

40 Simplicius, *On Aristotle's Physics* 5.6 230b21–28 (CAG vol.10 p.916.4–30 Diels 1895)

Everyone advances it as an axiom that things that move naturally move more rapidly in the vicinity of their natural places, and [some] give a plausible reason, saying that they gain power as they come closer to their proper wholes, as being then more perfected in their form.¹ Others say that the quantity of the intervening air hinders things that move upwards or downwards, until they get near to their proper places and the remaining interval is small. But few add evidence that this is the case, that things that move in accordance with nature do move faster when they are in the vicinity of their proper places. Accordingly nothing, I suppose, prevents [me] from adding what was said by the naturalist Strato. For saying in his *On Motion* that the last change of place is made in the shortest time by that which is moving, he goes on, “It is clear in the case of things carried downwards through the air by their weight that this is what happens; for in the case of water

¹ At *On Aristotle's On Heaven* 264.22–25 Simplicius gives this as Aristotle's own view.

κεράμων καταρρέον ὕδωρ, ἐάν τις ἀφ' ὑψηλοῦ τόπου
φερόμενον αὐτὸ θεωρῇ, ἄνωθεν μὲν συνεχὲς φαίνεται
ρέον, ἐν δὲ τῷ κάτω διεσπασμένον πίπτει ἐπὶ τὸ ἔδαφος. εἰ
οὖν μὴ αἰεὶ τὸν ὕστερον τόπον θᾶττον ἐφέρετο, οὐκ ἂν ποτε
συνέβαινεν αὐτῷ τοῦτο.” λέγει δὲ τοῦτο τὸ ἀποσπᾶσθαι
τοῦ συνεχοῦς τὸ πλησιαίτερον τοῦ ἐδάφους γινόμενον.

ἔτι δὲ καὶ ἄλλο προστίθῃσι τεκμήριον λέγων “ἐάν
τις λίθον ἢ ἄλλο βάρος ἔχον ἀφῇ ἀποσχὼν τῆς γῆς ὅσον
δακτυλιαῖον ὕψος, οὐ πάνυ ποιήσεται ἔνδηλον πληγὴν
ἐν τῷ ἐδάφει, ἐάν δὲ πλέθρον ἢ ἔτι πλέον ἀποσχὼν ἀφῇ
ἄνωθεν, ἰσχυρὰν πληγὴν ποιήσῃ. καὶ ἄλλο μὲν, φησὶν,
οὐδὲν αἴτιον τῆς πληγῆς ἐστίν· οὔτε γὰρ τὸ βάρος μείζον
ἔχει, οὔτε μείζον τὸ κινούμενον γεγένηται οὔτε πλείω
τόπον ἐπωθοῦν οὔτε ὑπὸ πλείονος ὠθούμενον, θᾶττον
δὲ φερόμενον. καὶ παρὰ τοῦτο καὶ ταῦτα καὶ ἄλλα πολλὰ
συμπτώματα συμβαίνει.” τοῦτο δὲ οἶμαι τὸ τεκμήριον
δηλοῖ, ὅτι ὀλίγον ἐξαιρούμενον ἀπὸ τῆς γῆς ὡς ἔτι ἐν τῇ
γῇ ὄν δυσκίνητόν ἐστιν, ἀπὸ πολλοῦ δὲ κινούμενον ἐπὶ τὸν
οἰκεῖον τόπον, αἰεὶ καὶ μᾶλλον δυναμοῦται πρὸς τοῦτο.

18 αὐτὸς *F* ἄνωθεν μὲν *A*: ἄνω μὲν *CFM*: ἄνω *a* φαίνεται] φέρεται *F*
διεσπασμένον *ti M* 20 αἰεὶ εἰς τὸν *C*² ἐπεφέρετο *F* 21 τὸ] τῷ *F* 24
ἔχων *AM* ἀφῇ ἀποσχὼν τῆς γῆς *CM*: ἀπὸ τῆς γῆς *tantum AF*: ἀπὸ τῆς γῆς
ὑψώσας *a* 25 ὕψος ῥίψῃ *a* 26 ἐπὶ τῷ *Fa* 26–27 ἄνωθεν ἀφῇ *Fa* 27
post πληγὴν *ras. F* ποιήσεται *Fa* φησὶν *om. F* 27–28 φησὶν *post* αἴτιον
a 28 μείζον *C* 30 οὔτε δ' ὑπὸ *C* ἐπωθοῦμενον *a* 30–31 θᾶττον δὲ
φερόμενον] ἢ παρὰ τὸ θᾶττον φέρεσθαι *a* 31 καὶ παρὰ τοῦτο] ἢ παρὰ τοῦτο
F: παρὰ τοῦτο γὰρ *a* 35 δυναμοῦται] δραμεῖται *F*

41 Simplicius, In Aristotelis Physica 6.4 234b10–20 (CAG t.10 p. 964.29–965.19 Diels 1895)

ταῦτα δὲ καὶ τὸν κορυφαῖον ἀρέσκει τῶν Ἀριστοτέλους
ἐταίρων τὸν Θεόφραστον ἐν τῷ πρώτῳ τῶν Περι κινήσεως
p.965 αὐτοῦ λέγοντα, ὅτι “αἱ μὲν ὀρέξεις καὶ ἐπιθυμίαι καὶ ὄργανα
σωματικὰ κινήσεις εἰσὶ καὶ ἀπὸ τούτου τὴν ἀρχὴν ἔχουσιν,
ὅσαι δὲ κρίσεις καὶ θεωρίαι, ταύτας οὐκ ἔστιν εἰς ἕτερον 5

1–11 *Theophrastus, fr.271 FHS&G* 3–7 *cf. Aristotelem, De an. 1.4 408a34–b29*

1 τὸν κορυφαῖον *A*: τῷ κορυφαίῳ *CFMa* 2 τῷ Θεοφράστῳ *CM*: Θεοφράστῳ
Fa 3 λέγοντι *CFMa* καὶ αἱ ἐπιθυμίαι *CFa*: καὶ αὐταὶ ἐπιθυμίαι *M* 4
τούτων *F* τὴν *om. AFa* ἔχουσαι *C* 5 κρίσις *a*

that flows down from a tiled roof [or: from a jar], if one looks at it when it is carried down from a high place, it is clear that above it flows continuously, but that at the bottom it has been broken up when it falls on the ground. If it did not move more rapidly in each later part [of its journey], this would not happen to it.” (By “this” he means that which comes nearer the ground being broken off from the continuous stream.)

Moreover, he adds another piece of evidence, saying “if someone lets go a stone, or something else possessing weight, holding it a finger’s breadth above the ground, it will certainly not make a visible impact on the ground, but if one lets it go holding it a hundred feet up or more, it will make a strong impact. And there is,” he says, “no other reason for the impact. For it does not have greater weight, nor is the thing that moves greater, nor does it strike a greater area, nor is it impelled by a greater [external force]; but it does move more quickly. And both this and many other things happen for this reason.” This piece of evidence I think shows that, when it is raised a little distance from the earth it does not move easily because it is still in [the region of] the earth, but when it moves towards its proper place from a great distance, it constantly gains more power [to move] towards this.

- 41** Simplicius, *On Aristotle’s Physics* 6.4 234b10–20 (CAG vol.10 p. 964.29–965.19 Diels 1895)

This was also the opinion of the chief of Aristotle’s colleagues, Theophrastus, who in the first [book] of his *On Change* says
p.965 “instances of appetition and desire and anger are bodily changes and have their origin in [the body], but all those that are judgments and instances of theoretical consideration cannot be referred to [something] else, but have their beginning and activity

ἀναγαγεῖν, ἀλλ' ἐν αὐτῇ τῇ ψυχῇ καὶ ἡ ἀρχὴ καὶ ἡ ἐνέργεια καὶ τὸ τέλος, εἴ γε δὴ καὶ ὁ νοῦς κρεῖττόν τι καὶ θεϊότερον, ἅτε δὴ ἔξωθεν ἐπεισιῶν καὶ παντέλειος.” καὶ τούτοις ἐπάγει “ὕπερ μὲν οὖν τούτων σκεπτέον, εἴ τινα χωρισμὸν ἔχει πρὸς τὸν ὄρον, ἐπεὶ τό γε κινήσεις εἶναι καὶ ταύτας ὁμολογούμενον.” 10

καὶ Στράτων δὲ ὁ Λαμψακηνὸς ὁ Θεοφράστου γεγωνὶς ἀκουστής καὶ ἐν τοῖς ἀρίστοις Περιπατητικοῖς ἀριθμούμενος τὴν ψυχὴν ὁμολογεῖ κινεῖσθαι οὐ μόνον τὴν ἄλογον ἀλλὰ καὶ τὴν λογικὴν, κινήσεις λέγων εἶναι τὰς ἐνεργείας καὶ τῆς ψυχῆς. λέγει οὖν ἐν τῷ Περὶ κινήσεως πρὸς ἄλλοις πολλοῖς καὶ τάδε· “ἀεὶ γὰρ ὁ νοῦς κινεῖται ὥσπερ καὶ ὁ ὁρῶν καὶ ἀκούων καὶ ὁσφραϊνόμενος· ἐνέργεια γὰρ ἡ νόησις τῆς διανοίας καθάπερ καὶ ἡ ὄρασις τῆς ὀψεως.” καὶ πρὸ τούτου δὲ τοῦ ῥητοῦ γέγραφεν· “ἐπεὶ οὖν εἰσιν αἱ πλεῖσται τῶν κινήσεων αἰτίαι, ἅς ἡ ψυχὴ καθ' αὐτὴν τε κινεῖται διανοουμένη καὶ ἅς ὑπὸ τῶν κινήσεων ἐκινήθη πρότερον. δῆλον δὲ ἐστίν· ὅσα γὰρ μὴ πρότερον ἐώρακε, ταῦτα οὐ δύναται νοεῖν, οἷον τόπους ἢ λιμένας ἢ γραφὰς ἢ ἀνδριάντας ἢ ἀνθρώπους ἢ τῶν ἄλλων τι τῶν τοιούτων.” ἀλλ' ὅτι μὲν ἡ ψυχὴ κινεῖται κατὰ τοὺς ἀρίστους τῶν Περιπατητικῶν, καὶ μὴ τὴν σωματικὴν κίνησιν, δῆλον ἐκ τούτων. 15 20 25

7–8 cf. Aristotelem, *De gen.anim.* 2.3 736b27–28

6 ἀγαγεῖν *F*Ma αὐτῇ *om.* *M* καὶ ἡ ἀρχὴ *om.* *a* 7 εἴ γε δὴ *coni.* *Diels*: εἰ δὲ δὴ *codd.*: ἔτι τε δὴ *Wimmer* (τε *ut coniectura*) κρεῖττόν τι καὶ θεϊότερον *A*: κρεῖττόν τι μέρος καὶ θεϊότερον (θεϊότατον *F*) *Fa*: θεϊότερον τι καὶ κρεῖττόν *CM* 8 παντελῇ *F*: παντελῶς *Wimmer* post παντέλειος *lacunam statuit Huby* ὡς ἐν τούτοις *F* 9 οὖν *om.* *F* εἰς τινα *M* 13 ἐν *om.* *Fa* 16 καὶ *A*: *om.* *CFMa* γοῦν *C* τῷ *AFa*: τοῖς *CM* 17 ἄλλοις πολλοῖς καὶ τάδε] ἄλλοις καὶ πολλοῖς τοῖαδε *F* 18 ὁ ἀκούων καὶ ὁ ὁσφραϊνόμενος *CM* 19 νόησις] κίνησις *F* καὶ *om.* *CM* 20 ἐπεὶ] ὅτι *a* 21 οὖν εἰσιν] τοῦ νοεῖν *coni.* *Diels* αἰτίαι *C*Ma: αἰτίαι *A*: αἰτιον *F*: αἱ αὐταὶ *Poppelreuter* 22 τε *om.* *Fa* κινήσεων *ACFM*: αἰσθήσεων *a* 23 δὲ *om.* *a* 28 δῆλων (*sic*) *C*¹ *ut vid.*

De caelo

42 Stobaeus, *Eclogae* 1.23.1 (p.200.21–22 Wachsmuth 1884)

Παρμενίδης, Ἡράκλειτος, Στράτων, Ζήνων πύρινον εἶναι

and end in the soul itself, if indeed¹ intellect too is something superior and more divine,” as having entered in from outside and being perfectly complete. And to this he adds, “Well, we must consider these [cases], whether they involve some distinction in the definition, since it is agreed that these too are changes.”

And Strato of Lampsacus, who was Theophrastus’ pupil and [is] counted among the best of the Peripatetics, agrees that not only irrational but also rational soul [undergoes] change, calling the activities of the soul, too, changes. For in his *On Motion* he says the following, in addition to many other things: “The person who thinks is always changed, like the one who sees and hears and smells. For thinking is an activity of thought, as seeing, too, is of sight.” And before this statement he wrote: “since most changes are causes, those in which the soul is changed in itself when it thinks, and those in which it was changed by [other] changes previously. This is clear: for it cannot think of the things that it has not previously seen, for example places or harbours or pictures or statues or people or anything else like this.” Well, that the soul undergoes change according to the best of the Peripatetics, even if not bodily change, is clear from these [passages].

¹ I adopt Diels’ conjecture *ei ge dê*. FHS&G (271) retain the MSS *ei de dê*, “But if,” starting a new sentence, and postulate a lacuna after “complete.” Whether the quotation from Theophrastus ends at “more divine,” at “perfectly complete” (less likely, as the latter is a term commonly used by Simplicius), or indeed at “from outside” or at “something else,” is unclear. See Huby 1999, 28.

Heavens

42 Stobaeus, *Selections* 1.23.1 (p.200.21–22 Wachsmuth 1884)

Parmenides, Heraclitus, Strato and Zeno [the Stoic] [said] that

106 Strato of Lampsacus

τὸν οὐρανόν.

1–2 *Aëtius* 2.11.4 *Diels* (DG p.340b5–7: de [Plutarchus] vide infra); *Parmenides*, 28A38 DK; *Heraclitus*, 22A10 DK; *Zeno Citieus*, SVF 1.116

1–2 πύρινον εἶναι τὸν οὐρανόν *tantum exhibet* [Plutarchus], *De placitis* 2.11 (DG p.340a6) a *Diels ex* [Galeno], *Hist. Phil.* 54 (DG p.623.21), *ubi haec verba in doctrina Aristotelis falso inveniuntur, restitutus*

43 Stobaeus, Eclogae 1.24.3 (p.206.5–8 Wachsmuth 1884)

Μητρόδωρος ἀπάντας τοὺς ἀπλανεῖς ἀστέρας ὑπὸ τοῦ
ἡλίου προλάμπεσθαι.
Στράτων καὶ αὐτὸς τὰ ἄστρα ὑπὸ τοῦ ἡλίου φωτίζεσθαι.

1–2 [Plutarchus], *Placita* 2.17 (BT p.89.4–5 Mau 1971) = DG 346a10–12 *Diels*; *Eusebius*, *Praep. Ev.* 15.48.1 (GCS 8.2 [43.2] p.414.11–12 *Mras* 1956); *Metrodorus Chius*, 70A9 DK 1–3 *Aëtius*, *Placita* 2.17.1–2 *Diels* (DG p.346b11–15)

44 Scholion in Basilii Magni Homiliam in Hexaemeron 1.10 (GCS n.f.2 p.17.11–18.6 de Mendieta et Rudberg 1997): no.26, p.201.3–8 Pasquali 1910 = p.546.3–8 Pasquali 1986

τὴν γῆν ἀκίνητον ἔφη Παρμενίδης ὁ Ἑλεάτης, Ξενοφάνης
ὁ Κολοφώνιος· Πλάτων δὲ αὐτὴν ἵλλεσθαι φησὶ περὶ τὸν
διὰ παντὸς τεταμένον πόλον ὅπερ ἂν εἴη στρέφεσθαι. ἀλλὰ
μὴν καὶ Ἀριστοτέλης καὶ οἱ ἀπὸ τῆς Στοᾶς ἀκίνητον
ἀπέλιπον τὴν γῆν· τῇ δὲ προκειμένη νῦν αἰτιολογία τῇ περὶ ⁵
τῆς ἀκινήσεως τῆς γῆς Στράτων δοκεῖ πρῶτος ὁ φυσικὸς
χρήσασθαι.

1–5 *Cramer*, *Anecdota Oxoniensia* III p. 413.23–29, ex cod. Oxon. Barocc. 85 fol. 122r (= O) 1 *Aëtius* 3.15.7 *Diels* (DG p.380.13–18) = *Parmenides*, 28A44 DK 1–2 *Simplicius*, *In Aristotelis De caelo* p.522.5–6 = *Xenophanes* 21A47 DK 2–3 *Plato*, *Timaeus* 40b; *Aristoteles*, *De caelo* 2.13 293b30–33 3–5 *Aristoteles*, *De caelo* 2.14 296b22–23; SVF 2.646

2 ἰλέσθαι O περὶ om. *Cramer* 3 διαπαντὸς O ἂν εἴη] ἀνία O ἄλλα
Cramer, *typorum errore ut videtur* 5 προεμένη O 6 ἀκινήσεως O

the heaven is made of fire.

43 Stobaeus, *Selections* 1.24.3 (p.206.5–8 Wachsmuth 1884)

Metrodorus [said] that all the fixed stars receive light from the sun.

Strato himself too [said] that the stars¹ are illuminated by the sun.

¹ In itself the term can apply either to the stars or to the planets, and this claim is *true* of the latter. But the preceding report of Metrodorus suggests that a reference to the fixed stars is intended here.

44 Scholion on Basil the Great, *Homilies on the Six Days of Creation* 1.10 (GCS n.f.2 p.17.11–18.6 de Mendieta et Rudberg 1997): no.26, p.201.3–8 in Pasquali 1910, 194–228) = p.546.3–8 in Pasquali 1986, 538–74

That the earth is unmoved was said by Parmenides of Elea and Xenophon of Colophon. Plato says that it winds around the axis which extends through the whole (that will be: “it turns”). Aristotle too and the Stoics left the earth unmoved. But the explanation given here¹ for the immobility of the earth seems to have been used first by Strato the naturalist.

¹ Basil in fact gives *two* explanations, attributing them to “certain of the natural philosophers” and not presenting them as alternatives: (i) the indifference argument from the central position of the earth in the universe (p.17.11–16 de Mendieta and Rudberg); (ii) the argument that heavy things tend to the centre of the universe (p.17.17–18.6). Pasquali and De Mendieta and Rudberg both connect the scholion with the introductory words of the whole sequence, but Pasquali, who discusses the scholion at length (203–6), argues that it in fact relates to the second, Peripatetic argument in Basil. Pasquali further notes that Basil states the second argument in terms not just of *heavy* things tending to the centre of the universe (which would fit Aristotle’s view, rather than Strato’s), but of the *heaviest* ones doing so; cf. **49–50** below.

De principiis

45A [Galenus], Hist. Phil. 18 (DG p. 610.8–9 et 610.20–611.3 Diels 1879)

Καὶ περὶ μὲν τῆς δραστηκῆς αἰτίας ἐπὶ τοσοῦτον. διεξελεθῆναι
 δ' ἂν εἴη καιρὸς καὶ περὶ τῆς ὑλικῆς. . . . Δημόκριτος δὲ καὶ
 Ἐπίκουρος τὰς ἀτόμους ἀρχὰς πάντων νομίζουσιν,
 Ἡρακλείδης δὲ ὁ Ποντικὸς καὶ Ἀσκληπιάδης ὁ Βιθυνὸς
 ἀνάρμους ὄγκους τὰς ἀρχὰς ὑποτίθενται τῶν ὄλων, ⁵
 p.611 Ἀναξαγόρας δὲ ὁ Κλαζομένιος τὰς ὁμοιομερείας, Διό-
 δωρος δὲ ὁ Κρόνος ἐπικεκλημένος ἀμερῇ καὶ ἐλάχιστα
 σώματα, Πυθαγόρας δὲ τοὺς ἀριθμούς, οἱ μαθηματικοὶ δὲ
 τὰ πέρατα τῶν σωμάτων, Στράτων δὲ ὁ φυσικὸς
 προσωνομασμένους τὰς ποιότητας. ¹⁰

2–6 Heraclides Ponticus, fr.60A SPSV (fr.119a Wehrli) 6–8 Diodorus Cronus,
 fr.117E Döring

1–2 δραστηκῆς – ὑλικῆς B: δραστηκῆς διεξελεθῆναι ἂν εἴη καιρὸς tantum A 3
 ἀρχὰς εἶναι BN 4 καὶ] καὶ ὁ A 5 ἀνόρμους AB ὄγκους] ὄρους B
 ὑποτίθενται B: ὑποτιθέντες A τῶν ὄλων Diels: τῶν ὄρων A: τῶν ὄρων B 8
 τοὺς ἀριθμούς B: τοῦ ἀριθμοῦ A οἱ B: om. A 10 προσωνομασμένους Diels:
 προσωνομασμένας AN: προσωνόμασε B

45B Sextus Empiricus, Pyrrhoniae hypotyposes 3.30 et 32 (BT t.1 p.141.14–16 et 142.5–12 Mutschmann et Mau 1958)

περὶ μὲν οὖν τῆς δραστηκῆς τοσαῦτα νῦν ἀρκέσει λελέχθαι·
 συντόμως δὲ καὶ περὶ τῶν ὑλικῶν καλουμένων ἀρχῶν
 32 p.142 λεκτέον. . . . Δημόκριτος δὲ καὶ Ἐπίκουρος ἀτόμους,
 Ἀναξαγόρας δὲ ὁ Κλαζομένιος ὁμοιομερείας, Διόδωρος δὲ
 ὁ ἐπικληθεὶς Κρόνος ἐλάχιστα καὶ ἀμερῇ σώματα, Ἡρα- ⁵
 κλείδης δὲ ὁ Ποντικὸς καὶ Ἀσκληπιάδης ὁ Βιθυνὸς
 ἀνάρμους ὄγκους, οἱ δὲ περὶ Πυθαγόραν τοὺς ἀριθμούς, οἱ
 δὲ μαθηματικοὶ τὰ πέρατα τῶν σωμάτων, Στράτων δὲ ὁ
 φυσικὸς τὰς ποιότητας.

3–7 Heraclides Ponticus, fr.60B SPSV (fr.119b Wehrli) 4–5 Diodorus Cronus,
 fr.117C Döring

1 τῆς δραστηκῆς] *de agentis causa recte interpretatus est versio Latina*

Principles

45A Pseudo-Galen, *History of Philosophy* 18 (DG 610.8–9 and 610.20–611.3 Diels 1879)

So much concerning the efficient cause. It is time to go through [the accounts of] the material [cause] too . . . Democritus and Epicurus think that the atoms are the principles of all things. Heraclides of Pontus and Asclepiades of Bithynia suppose that unjointed masses are the principles of everything, Anaxagoras of p.611 Clazomenae the homoeomeries,¹ Diodorus, surnamed Cronus, very small bodies with no parts, Pythagoras, numbers, the mathematicians, the limits of bodies, Strato who is called the naturalist, qualities.

¹ Anaxagoras' fundamental material principles were infinitesimal portions of "stuffs." "homeomerous" is Aristotle's term for "stuffs," which are (in his view) uniform throughout; every part of a lump of gold is (supposedly) gold, by contrast with the parts of a face that are not themselves faces. This does not actually apply to Anaxagoras' theory, for the infinitesimal nature of the portions means that no stuff can ever be isolated: "in everything there is a portion of everything." Nevertheless, "homeomery" came to be used as a term for Anaxagoras' theory, as indicating that bone (say) is made up *chiefly* of bone (rather than being a particular blend of other elements: Lucretius 1.830); and "homeomer-ies" became a standard doxographical term for the portions themselves.

45B Sextus Empiricus, *Outlines of Pyrrhonism* 3.30 and 32 (BT vol.1 p.141.14–16 and 142.5–12 Mutschmann and Mau 1958)

Concerning the efficient [cause] it will be sufficient to say this much for the present. We must speak briefly also about what 32 p.142 are called the material principles . . . Democritus and Epicurus, atoms, Anaxagoras of Clazomenae, homoeomeries, Diodorus, surnamed Cronus, very small bodies with no parts, Heraclides of Pontus and Asclepiades of Bithynia, unjointed masses, the followers of Pythagoras, numbers, the mathematicians, the limits of bodies, Strato the naturalist, qualities.

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- 45C** Schol. in Basilii Hom. in Hexaemeron 1.2 (GCS t.51 p.225b10–21 Rehm et Paschke 1965)

ὅτι δὲ ἐκ πλειόνων τὸν κόσμον καὶ τὴν ὕλην συνεστάναι λέγουσιν οἱ πάντες Ἑλλήνων σοφοί, φανερόν ἐστιν· αὐτίκα γοῦν ὁ μὲν Πυθαγόρας τῶν ἀρχῶν τὰ στοιχεῖα ἀριθμοὺς καλεῖ, Στράτων ποιότητας, Ἀλκμαίων ἀντιθέσεις, Ἀναξίμανδρος ἄπειρον, Ἀναξαγόρας ὁμοιομερείας, Ἐπικούρου ἀτόμους, Διόδωρος ἁμερῇ, Ἀσκληπιάδης ὄγκους, γεωμέτραι πέρας, Δημόκριτος ιδέας, . . .

3–6 Diodorus Cronus, fr.117F Döring 7 Democritus, 68A57 DK

- 45D** [Clemens Romanus], Recognitiones (interpretatio Rufini) 8.15.1–2 (GCS t. 51 225a10–23 Rehm et Paschke 1965)

Graecorum philosophi de principiis mundi quaerentes alius alia incessit via, denique Pythagoras elementa principiorum numeros esse dicit, Strato qualitates, Alcmaeon contrarietates, Anaxagoras aequalitates partium, Epicurus atomos, Diodorus amere, hoc est [ex his] in quibus partes non sint, Asclepiades oncos, quod nos tumores vel elationes possumus dicere, geometrae fines, Democritus ideas. . . .

1–8 DG p.250–51 Diels 2–6 Diodorus Cronus, fr.117F Döring 7–8 Democritus, 68A57 DK

3 Strato post Fabricium Diels DG 250 n.3: Callistratus codd., quod ex (Πυθαγόρας) . . . καλεῖ, Στράτων ortum esse iudicavit Diels 5 ex his secl. Rehm

- 46** Stobaeus, Eclogae 1.10.12 (p.124.18 Wachsmuth 1884)

Στράτων στοιχεῖα <θερμὸν> καὶ ψυχρόν.

1 Aëtius 1.3.24 Diels (DG p.288b19–20): non exhibet [Plutarchus], De placitis

1 θερμὸν add. Fabricius τὸ θερμὸν καὶ τὸ ψυχρόν Heeren

- 45C** Scholion on St. Basil, *Homily on the Six Days of Creation* 1.2 (GCS vol.51 p.225b10–21 Rehm and Paschke 1965)¹

That all the wise among the Greeks say that the world and matter are composed of a plurality of things is evident. For example Pythagoras calls the elements of the principles numbers, Strato qualities, Alcmaeon contrarities, Anaximander the indefinite, Anaxagoras homoeomeries, Epicurus atoms, Diodorus [things] without parts, Asclepiades masses, the geometers limit, Democritus shapes² . . .

¹ This text derives from the lost Greek original of **45D**.

² Of the atoms. Cf. Democritus 68A57, 68B141 DK.

- 45D** Pseudo-Clement of Rome, *Recognitions* (translation by Rufinus) 8.15.1–2 (GCS vol. 51 225a10–23 Rehm and Paschke 1965)

The philosophers among the Greeks, investigating the first principles of the world, followed different routes. In short, Pythagoras says that the elements of the principles are numbers, Strato qualities, Alcmaeon contrarities, Anaximander the indefinite, Anaxagoras equalities of parts,¹ Epicurus atoms, Diodorus [things] without parts, that is those in which there are no parts,² Asclepiades masses, which we may call swellings or raised [parts],³ the geometers limits, Democritus shapes . . .

¹ See the note to **45A**. Rufinus is attempting to express the meaning of “homeomeries”; “similarity of parts” would have been better.

² The Latin text first gives the Greek term and then interprets it in Latin.

³ Rufinus is attempting to render the meaning of the Greek term “masses,” but has mistakenly selected the specifically medical meaning of the same Greek term (not unnaturally, since Asclepiades was a medical writer).

- 46** Stobaeus, *Selections* 1.10.12 (p.124.18 Wachsmuth 1884)

Strato [said] that the elements [are the] <hot>¹ and [the] cold.

¹ “Hot” is an addition to the text by Fabricius. Heeren added “the” before “hot” and before “cold” to the Greek text; but it can in any case be understood.

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- 47** Epiphanius, *De fide* 9.37 (GCS t.3 p.508.11–13 Holl et Dummer 1985 = DG p.592.16–18 Diels 1879)

Στράτων [ὦν] ἐκ Λαμψάκου τὴν θερμὴν οὐσίαν ἔλεγεν αἰτίαν πάντων ὑπάρχειν. ἄπειρα δὲ ἔλεγεν εἶναι τὰ μέρη τοῦ κόσμου, καὶ πᾶν ζῶον ἔλεγε νοῦ δεκτικὸν εἶναι.

1 ὦν *del. Diels*: Στράτων ὦν *vulgo*: Στρατωνίων J 3 ἔλεγε νοῦ *Zeller*: ἔλεγεν οὐ J

- 48** Plutarch, *De primo frigido* 9 948cd (BT t.5.3 p.95.25–96.3 Hubert–Pohlenz–Drexler 1960)

οὐ μὴν ἀλλὰ καὶ τὰ αἰσθητὰ ταυτὶ προανακινήσαι βέλτιόν ἐστιν, ἐν οἷς Ἐμπεδοκλῆς τε καὶ Στράτων καὶ οἱ Στωικοὶ τὰς οὐσίας τίθενται τῶν δυνάμεων, οἱ μὲν Στωικοὶ τῷ ἀέρι τὸ πρῶτως ψυχρὸν ἀποδιδόντες, Ἐμπεδοκλῆς δὲ καὶ Στράτων τῷ ὕδατι· τὴν δὲ γῆν ἴσως ἂν ἕτερος φανείη⁵ ψυχρότητος αἰτίαν ὑποτιθέμενος.

1 προανακρίναι *coni. Pohlenz* 4 πρῶτον *g* δὲ *om. g* 5 δὲ *om. g* 6 αἰτίαν *g*: οὐσίαν **O**

De pondere

- 49** Simplicius, *In Aristotelis De caelo* 1.8 277a33–b9 (CAG t.7 p.268.32–269.14 Heiberg 1894)

οἱ δὲ τοῦ πάντα πρὸς τὸ μέσον φέρεσθαι κατὰ φύσιν τεκμήριον κομίζοντες τὸ τῆς γῆς ὑποσπωμένης τὸ ὕδωρ ἐπὶ τὸ κάτω φέρεσθαι καὶ τοῦ ὕδατος τὸν ἀέρα ἀγνοοῦσι τὴν^{p.269} τούτου αἰτίαν τὴν ἀντιπερίστασιν οὖσαν· τῶν γὰρ παχυτέρων εἰς τὴν τῶν λεπτοτέρων χώραν μετατιθεμένων⁵ τὰ λεπτότερα τὴν τῶν παχυτέρων χώραν μεταλαμβάνει περιωθούμενα πρὸς τὸ κάτω διὰ τὸ μηδὲν εἶναι κενὸν μηδὲ σῶμα διὰ σώματος χωρεῖν. ἰστέον δέ, ὅτι οὐ Στράτων μόνος οὐδὲ Ἐπίκουρος πάντα ἔλεγον εἶναι τὰ σώματα βαρέα καὶ φύσει μὲν ἐπὶ τὸ κάτω φερόμενα, παρὰ φύσιν δὲ¹⁰ ἐπὶ τὸ ἄνω, ἀλλὰ καὶ ὁ Πλάτων οἶδε φερομένην ταύτην καὶ διελέγχει τό τε κάτω καὶ τὸ ἄνω ἐπὶ τοῦ κόσμου μὴ καλῶς εἰρῆσθαι νομίζων καὶ τὸ βαρέα λέγεσθαι οὕτως ὥς

- 47** Epiphanius, *On Faith* 9.37 (GCS vol.3 p.508.11–13 Holl et Dummer 1985 = DG 592.16–18 Diels 1879)

Strato from Lampsacus said that the hot substance is the cause of all things. He said that the parts of the world are infinite, and he said that every living creature is capable of thought.¹

¹Literally “receptive of intellect.”

- 48** Plutarch, *On the Principle of Cold* 9 948cd (BT vol.5.3 p.95.25–96.3 Hubert–Pohlenz–Drexler 1960)

p.96 But indeed it is better to consider first of all these perceptible things, in which Empedocles and Strato and the Stoics locate the being¹ of the powers, the Stoics assigning primary cold to air, Empedocles and Strato to water; perhaps someone else might appear who proposes earth as the cause of cold.

¹ Literally: “beings.”

Weight

- 49** Simplicius, *On Aristotle's On Heaven* 1.8 277a33–b9 (CAG vol.7 p.268.32–269.14 Heiberg 1894)

p.269 Those who introduce, as evidence that all things naturally move towards the centre [of the world], the fact that water moves downwards when earth is removed from under [it], and air when water [is], fail to recognise that the cause of these things is mutual replacement. For when the denser things are transferred into the place of the rarer ones, the rarer ones take the place of the denser ones, being pushed round in a circle downwards, because there is no void and body does not pass through body. One should note that not only did Strato and Epicurus say that all bodies are heavy and move downwards naturally, upwards unnaturally, but Plato too knows and refutes [this opinion],¹ thinking that “up” and “down” do not correctly apply to the world, and not accepting the description of heavy things as those that move downwards.

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πρὸς τὸ κάτω φερόμενα μὴ ἀποδεχόμενος. γράφει δὲ ἐν
 Τιμαίῳ τάδε· “φύσει γὰρ δὴ τινὰς τόπους δύο εἶναι 15
 διειληφότες διχῇ τὸ πᾶν ἐναντίους, τὸν μὲν κάτω, πρὸς ὃν
 φέρεται πάντα, ὅσα τινὰ ὄγκον σώματος ἔχει, τὸν δὲ ἄνω,
 πρὸς ὃν ἀκουσίως ἔρχεται πᾶν, οὐκ ὀρθὸν οὐδαμῇ
 νομίζειν.” καὶ γὰρ καὶ οἱ τὰς ἀτόμους λέγοντες ναστὰς
 οὔσας βαρείας ἔλεγον αὐτὰς καὶ βάρους τοῖς συνθέτοις 20
 αἰτίας, ὥσπερ κουφότητος τὸ κενόν.

1–4 et 8–14 *Epicurea* 276, p.196.32–197.8 *Usener* 15–19 *Plato*, *Timaeus* 62c

2 κομίζοντες *Ab*: νομίζοντες *DEc* ἀποσπωμένης *D* 3 τὴν *del.* *E*², *om.* *C et Usener, Epicurea* p.197.2 5 τῶν *om.* *a* 6 μεταλαμβάνουσι *A* 9 ἔλεγον] *λε*[†]
D 11 οἶδε] εἶδε *E* αὐτήν] αὐτήν τὴν δόξαν *bc* 15 δὴ *Ab*: *om.* *DEc* 19
 λέγοντες *Ab*: λέγοντες εἶναι *DEc* 21 ὥσπερ οὖν *D*

50A Stobaeus, *Eclogae* 1.14.1h (p.143.6–8 Wachsmuth 1884)

Στράτων μὲν προσεῖναι τοῖς σώμασι φυσικὸν βάρος, τὰ δὲ
 κουφότερα τοῖς βαρυτέροις ἐπιπολάζειν, οἷον ἐκπυρηνι-
 ζόμενα.

1–3 *Aëtius* 1.12.7 *Diels* (*DG* p.311b23–26): *non exhibet* [*Plutarchus*]

50B Simplicius, In Aristotelis *De caelo* 1.8 277a33–b9 (CAG t.7 p.267.29–268.4 Heiberg 1894)

ὅτι δὲ οὐδὲ τῇ ὑπ’ ἀλλήλων ἐκθλίψει βιαζόμενα κινεῖται,
 δείκνυσιν ἐφεξῆς. ταύτης δὲ γεγόνασι τῆς δόξης μετ’ αὐτὸν
 p.268 Στράτων τε καὶ Ἐπίκουρος πᾶν σῶμα βαρύτητα ἔχειν
 νομίζοντες καὶ πρὸς τὸ μέσον φέρεσθαι, τῷ δὲ τὰ βαρύτερα
 ὑφίστανειν τὰ ἥττον βαρέα ὑπ’ ἐκείνων ἐκθλίβεσθαι βία 5
 πρὸς τὸ ἄνω, ὥστε, εἴ τις ὑφείλε τὴν γῆν, ἐλθεῖν ἂν τὸ
 ὕδωρ εἰς τὸ κέντρον, καὶ εἴ τις τὸ ὕδωρ, τὸν ἀέρα, καὶ εἰ
 τὸν ἀέρα, τὸ πῦρ.

1–8 *Epicurea* 276, p.196.25–31 *Usener*

1 δὲ *om.* *A* οὐδὲ *a*: οὔτε *ADEc* 2 δὲ *om.* *Ec* 4 μέσον *AE*²*b*: μέρος *D*:
 μείζον *E* 7 εἰς τὸ κέν *in ras.* *E*

He writes as follows in the *Timaeus*: “It is in no way right to think that there exist by nature two distinct regions entirely opposite to each other, one below, towards which all things that have some bodily bulk move, and the other above, towards which everything moves unwillingly.” And those who spoke of atoms, which contain no void,² said that they were heavy and causes of heaviness in compounds, as void [was] of lightness.

¹The Greek text appears to be corrupt. “This opinion” is supplied in the Greek by bc.

²Literally: “are full.”

50A Stobaeus, *Selections* 1.14.1h (p.143.6–8 Wachsmuth 1884)

Strato [said] that bodies possess natural heaviness, and lighter things float on the surface of heavier ones, being as it were squeezed out like pips.¹

¹ The term *ekpurênizein*, properly indicating squeezing out the pip or stone of a fruit, is used by Aristotle in explaining condensation at *Physics* 4.6 214a33.

50B Simplicius, *On Aristotle's On Heaven* 1.8 277a33–b9 (CAG vol.7 p.267.29–268.4 Heiberg 1894)

[Aristotle] next shows that [the elements] are not moved by force being squeezed out by each other. This opinion was held after p.268 him by Strato and Epicurus, who thought that every body possesses heaviness and moves towards the centre [of the world], but because the heavier ones settle at the bottom the less heavy ones are forcibly squeezed out upwards by them, so that, if someone removed the earth, water would go to the centre, and if the water, air, and if the air, fire.

- 50C** Themistius, In Aristotelis De caelo 1.8 277a23–b2 (CAG t.5.4 p.27–31 Landauer 1902)

ואמר ראוי בקצת בני אדם שיחשוב בתנועת הימדות
 שהם אינם טבעיים להם. להוליד בעבור זה
 שהוא אין להם מקומות מוגדרים יוגדרו אליהם.
 אבל תנועתם אל מקום אליו באונם לפי מה
 יתנועעו שמוכרחים אליו. אמנם האש ישוב אל ממה עם⁵
 ההדחות וההכלאה. וכן אל מטה כשידחנו דוחה
 ויחשבו ויכלאנו אל מטה. כי האומר כי בזה הדעת סמוטר
 הטבעי ושאיפיקורים גם כן מי שהוא חושב זה.

מעה: *con. Rapoport Albert* 5 מטה *codd.* שוכרח, יתנועע, תנועתה 4
con. האומר 7 *vitios.* אל מעלה, הארץ *fort. suppl.* [וכן]: *codd.*
Landauer

- 50D** Themistius, In Aristotelis De caelo 1.8 277a23–b2 (versio Alatin, anno 1574, fol.14v20–25)

non est incongruum, ut quispiam dubitetur, existimans
 elementorum motus minime illis secundum naturam inesse,

50C Themistius, *On Aristotle's On Heaven* 1.8 277a23–b2 (CAG vol. 5.4 p.27.27–31 Landauer 1902)¹

And he said:² it is appropriate for some people to think, regarding the movement of the elements, that they are not natural to them, [and] to conclude from this that it is [the case] that they do not have defined places to which they are determined, but rather their movement to the place towards which they move is by compulsion, since they are forced towards it. Indeed, [they think that] fire turns upwards with the pushing out and the compulsion, and similarly downwards, when a pushing force compels it downwards.³ And they think that those who hold⁴ this opinion are Stoter⁵ the Naturalist and that Epicurus is also one who thinks this.

¹ I am most grateful to Professor Ada Rapoport-Albert for the translation of the Hebrew.

² This appears to be a formula from the Arabic source of the Hebrew introducing a new paragraph, and referring by “he” to Themistius rather than to Aristotle, who mentions the view discussed here but does not describe it as appropriate or reasonable.

³ “compels it downwards” conjectured by Rapoport-Albert; “compels it upwards” MSS. Landauer’s note is not entirely clear, but from comparison with his emendation of Alatinus’ Latin (see **50D**) it appears that he intends not “compels it towards the earth” (which would give the same sense as Rapoport-Albert’s conjecture) but rather “and similarly earth downwards, when a pushing force compels it.” That the downwards motion of earth is due to force is however *Plato’s* view, *contrasted* with that of Strato and, rightly (Berryman 1996, 163 n.8), with that of Epicurus by Simplicius in **49**. Themistius’ point is that the view he is criticising regards both the upwards movement of fire *and* the downwards movement of *fire* as due to force, failing to distinguish between them, whereas for Aristotle the second is due to force but the first is natural. Berryman loc. cit. argues that even so this for Strato conflicts with the claim in **49** and **50AB** that all bodies possess weight and naturally move downwards; but the texts can perhaps be reconciled if the point is that for fire to move *below earth* (or water or air) must be due to force.

⁴ So the MSS: Landauer conjectures the singular “he who holds,” in the light of the continuation of the sentence.

⁵ I.e. Strato.

50D Themistius, *On Aristotle's On Heaven* 1.8 277a23–b2, version by Alatinus, 1574, fol.14v20–25¹

It is not absurd that someone might doubt [this], thinking that the movements of the elements are not present in them by nature,

ut ex hoc deduceret, elementa definita loca, quibus terminentur, non habere: sed violenter moveri: quatenus nempe vi aliqua ad ea protruduntur. siquidem ignis impetu atque impulsu sursum detruditur, inibique coercetur: terra vero deorsum. at vero is cum naturae ordinem minime insequatur, physice non loquitur. cuius sententiae Epicurum fuisse existimatur.

1–9 suo Marte emendata ut Hebraea ex **50C** melius exprimerentur edidit Landauer, CAG t. 5.4 p.50.33–51.1 anno 1902, cuius lectiones in apparatu inferiore dedimus

1 dubitetur, existimans] existimaret tantum Landauer 4 moveri, <quo moventur>, quatenus Landauer 5–7 impetu atque impulsu – terra vero deorsum] sursum pergit extrusione et coercionem, similiter <terra> deorsum in quantum scilicet truditur et coercetur Landauer: terra reiecit Berryman 1996, 55 n.35: similiter deorsum delendum coni. Hankinson apud Berryman 7–9 at vero—fuisse existimatur] cuius sententiae Stratonem Physicum fuisse existimatur, et Epicurum quoque idem dixisse Landauer

Meteorologica

51 Aëtius 3.2, tit. et 4 (DG p.366.4–5 et 26–28 Diels 1879)

- 4 Περὶ κομητῶν καὶ διαπτόντων καὶ δοκίδων. . . . Στράτων ἄστρου φῶς περιληφθὲν νέφει πυκνῷ, καθάπερ ἐπὶ τῶν λαμπτήρων γίνεται.

1–3 [Plutarchus], *De placitis* 893AC (BT t.5.2.1 p.101.1 et 11–12 Mau 1971), *Stratone nominato*; Stobaeus, *Eclogae* 1.28.1a (p.227.5–6 et 22–23 Wachsmuth), *Stratone nominato*; [Galenus], *Hist. phil.* 75 (DG p.629.20 et 630.4–5 Diels), *Stratone nominato*

1 διαπτόντων] διαπτότων Stobaei cod. P: ἀτολίτων (i.e. ἀπτόντων, Diels) [Galenus] cod. A καὶ δοκίδων [Plutarchus]: καὶ τῶν τοιούτων Stobaeus: ἁστέρων [Galenus] 2 ante περιληφθὲν: πεπληρωμένον [Galenus], seclisit Diels νέφει πυκνῷ ψυχῇ τι [Galenus] (sed fortasse ψύχει τι legendum?) καθάπερ—γίνεται om. [Galenus]

and so deduce from this that the elements do not have definite places which are their final destinations, but are moved by force, in as much indeed as [they move] to those [places because] they are pushed towards them by some force, if indeed fire is forced² upwards and compelled there by a force and impulse, and earth³ downwards.⁴ But since this person does not follow the ordering of nature, he is not speaking as a naturalist. Epicurus is thought to have held this opinion.⁵

¹ Moses Alatinus, 1529–1605. Landauer modifies the Latin, printing in italics the words he has altered or supplied to correspond to the Hebrew. We have given Alatinus' actual version from the 1574 publication.

² The word Alatinus uses for "is forced" literally means either "is forced away" or "is forced down." Compare the Hebrew version in **50C**.

³ "Earth" is not in the Hebrew MSS. See note 3 to **50C**.

⁴ Landauer here replaces "is forced upwards . . . and earth downwards" by "moves upwards through being forced out and compelled, and similarly earth downwards in so far, clearly, as it is pushed and compelled." See, however, note 3 to **50C**. Berryman 1996, 55 n.35 rejects Alatinus' and Landauer's addition of "earth," and cites Hankinson as suggesting deleting "similarly <earth> downwards" altogether.

⁵ Landauer replaces "But since . . . this opinion" by "Strato the Naturalist is thought to have held this opinion, and Epicurus too to have said the same."

Meteorology

51 Aëtius 3.2, title and 4 (*DG* p.366.4–5 and 26–28 Diels 1879)

- 4 About comets and shooting stars and meteors. . . . Strato [said] that [a comet] is the light of a star surrounded by a thick cloud,¹ as happens in the case of lanterns.

¹ Pseudo-Galen has "filled with surrounded by a certain soul" (but perhaps we should read "by a certain coldness?"), and omits "as . . . lanterns": Diels deletes "filled with" as a gloss on "surrounded by" (a mistaken gloss, for it reverses the sense).

120 **Strato of Lampsacus**

- 52** Stobaeus, *Eclogae* 1.29.1 (p.231.10–11 et 233.18–27 Wachsmuth 1884)

p.233 . . . Ἀριστοτέλης ἐξ ἀναθυμιάσεως καὶ τὰ τοιαῦτα γίνεσθαι τῆς ξηρᾶς. ὅταν οὖν ἐντύχη μὲν τῇ ὑγρᾷ, παραβιάζεται δὲ τὴν ἔξοδον, τῇ μὲν παρατρίψει καὶ τῇ ῥήξει τὸν ψόφον, τῇ δ' ἐξάψει τῆς ξηρότητος τὴν ἀστραπὴν παρίστησι.

Στράτων θερμοῦ ψυχρῷ παρείξαντος, ὅταν ἐκβιασθὲν τύχη, τὰ τοιαῦτα γίνεσθαι, βροντὴν μὲν ἀπορρήξει, φάει δ' ἀστραπὴν, τάχει δὲ κεραυνόν, πρηστήρας δὲ καὶ τυφώνας τῷ πλεονασμῷ τῷ τῆς ὕλης, ἣν ἐκάτερος αὐτῶν ἐφέλκεται, θερμότεραν μὲν ὁ πρηστήρ, παχυτέραν δὲ ὁ τυφών.

1–10 *Aëtius* 3.3.*titulus* et 13–14 (DG p.367.20–22 et 370b8–22 Diels); [*Plutarchus*], *Placita* 3.3 893D et 893F (BT t.5.2.1 p.102.1–2 et 102.23–103.2 Mau 1971 = DG 367a20–22 et 370a8–21), et [*Galenus*], *Hist. phil.* 76 (DG p.630.11 et 25–29 Diels); vide tamen *apparatum inferiorem* ad 6–8 2–5 *Aristoteles*, *Meteorologica* 2.9 369a10–b11

1 κεραυνῶν—τυφώνων *om.* [*Galenus*] πρηστήρων τε (τε *om.* C) καὶ τυφώνων [*Plutarchus*] 3 τῆς *om.* [*Plutarchi*] *cod. Ven. Marc.* 521 τῆς ξηρᾶς *om.* [*Galenus*] οὖν ἐντύχη *Stobaei cod. F* [*Plutarchus*] [*Galenus*]: τύχη *Stobaei cod. P* παραβιάζεται [*Plutarchi*] *codd. plerique*, et in *Stobaei textum transtulit Heeren*: παραβιάζεται *Stobaei FP*: παραβιάζεται [*Plutarchi*] M et [*Galenus*] 5 ἐξάψει [*Plutarchus*] [*Galenus*] *Heeren*: ἐμφάσει *Stobaei FP* 6–8 *omiserunt* [*Plutarchus*] et [*Galenus*], *iis quae in versibus 8–10 sequuntur Aristotelis sententiae per errorem adiunctis* 7 φάει] φαύσει *Usener* 9 τῷ (*pr.*) *om.* [*Galenus*] τῷ (*alt.*) *om.* [*Plutarchus*] [*Galenus*] συνεφέλκεται [*Plutarchus*] 10 θερμότερος . . . παχύτερος [*Galenus*] παχυτέραν [*Plutarchus*], *Stobaei cod. Vat.*: ταχυτέραν *Stobaei FP*

- 53** Seneca, *Naturales Quaestiones* 6.13.1–6 (BT p.249.12–251.13 Hine 1996)

in hac sententia licet ponas Aristotelem et discipulum eius Theophrastum, non, ut Graecis visum est, divini, tamen et dulcis eloquii virum et nitidi sine labore. quid utrique placeat exponam. semper aliqua e terra evaporatio est, quae modo arida est, modo umido mixta; haec ab infimo edita et

4 e terra euaporatio est Z: euaporatio est e terra ψ: aliqua evaporatio est e terra BV

- 52** Stobaeus, *Selections* 1.29.1 (p.231.10–11 and 233.18–27 Wachsmuth 1884)¹

On thunder, lightning, thunderbolts, fiery waterspouts, typhoons.
p.233 . . . Aristotle [said] that such things too result from the dry exhalation. When it encounters the moist one, it forces a way out, and the friction and bursting produce the noise, the ignition of the dryness produces the lightning flash.

Strato [said] that such things happen whenever hot yields to cold, being forced out: thunder through the bursting out, the lightning flash through the light, the thunderbolt through the speed, fiery waterspouts and typhoons through the excessive quantity of matter which each of them brings with it, hotter [matter] in the case of the fiery waterspout, denser in that of the typhoon.

¹ The report in Stobaeus is also found in pseudo-Plutarch and pseudo-Galen, but they omit “Strato . . . through the speed,” so that what follows is given as part of the report of Aristotle.

- 53** Seneca, *Questions on Nature* 6.13.1–6 (BT p.249.12–251.13 Hine 1996)

Among supporters of this view you can count Aristotle and his pupil Theophrastus, a man not of divine eloquence, as the Greeks supposed,¹ but of [eloquence] that was pleasant and distinguished and unlaboured. I will set out the view they both held. There is a constant exhalation from the earth, sometimes dry, sometimes mixed with moisture; this is given off from the

¹ Alluding to the derivation of the name “Theophrastus” from the Greek words for “god” and “speaking.” See Theophrastus, fr.5B FHS&G.

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- in quantum potuit elata, cum ulteriorem locum in quem
 exeat non habet, retro fertur atque in se revolvitur; deinde
 p.250 rixa spiritus reciprocantis iactat obstantia et, sive inter-
 clusus sive per angusta enisus est, motum ac tumultum
 ciet. 10
- 2 Straton ex eadem schola est, qui hanc partem philo-
 sophiae maxime coluit et rerum naturae inquisitor fuit.
 huius tale decretum est. frigidum et calidum semper in
 contraria abeunt, una esse non possunt; eo frigidum
 confluit unde vis calida discessit, et invicem ibi calidum est 15
 unde frigus expulsum est. hoc quod dico verum esse et
 3 utrumque in contrarium agi, ex hoc tibi appareat. hiberno
 tempore, cum supra terram frigus est, calent putei nec
 minus specus atque omnes sub terra recessus, quia illo se
 calor contulit superiora possidenti frigori cedens. qui, cum 20
 in inferiora pervenit et eo se quantum poterat ingessit, quo
 densior, hoc validior est. <frigido autem aëri qui iam sub
 terra collectus est> hic calidus supervenit. cui necessario
 congregatus ille iam et in angulum pressus loco cedit.
- 4 p..251 idem e contrario evenit, cum vis maior frigidi illata in 25
 cavernis est: quicquid illic calidi latet, frigori cedens abit in
 angustum et magno impetu agitur, quia non patitur
 utriusque natura concordiam nec in uno moram. fugiens
 ergo et omni modo cupiens excedere proxima quaeque
 5 remolitur ac iactat. ideoque antequam terra moveatur, solet 30
 mugitus audiri, ventis in abdito tumultuantibus. Nec enim
 aliter posset, ut ait Vergilius noster, “sub pedibus mug-
 ire solum et iuga celsa moveri,” nisi hoc esset vent-
 6 orum opus. vices deinde huius pugnae sunt <eae>dem:
 fit calidi congregatio ac rursus eruptio; tunc frigida 35
 compescuntur et succidunt, mox futura potentiora. dum
 alterna vis cursat et ultro citroque spiritus com meat,
 terra concutitur.

32–33 Vergilius, Aeneis 6.256

9 actu multum Z^c 9–11 motum—schola est *om.* Z^l, *add. in marg.* Z^c 10 ciet
 VHpW: sciet Z^cAFU: eicit B 13 calidum et frigidum Z 15 calida] scalida
 Z: calidi Gercke 16 esse et Haase: est sed Zδθ: est si pU: sed W: est, scilicet
 Koestler: id est *coni.* Hine 1996a, 100 17 utrumque δ: utraque Zθπ 22–23
 frigido—collectus est *per coniecturam suppl.* Hine *op. cit.* 100–1 23 hic calidus
coni. Hine *loc. cit.*: huic alius (huic illius U) Ω: <ubi> huic frigus Gercke: hic

lowest part and travels upward as much as it can. When it cannot find a further place into which to pass, it is carried back and is turned back into itself; then the struggling of the breath moving backwards and forwards throws around the things that
p.250 are in the way, and, if it is shut in or forces its way out through narrow passages, it stirs up movement and disturbance.

- 2 Strato is from the same school; he concerned himself with this part of philosophy most of all and enquired into the nature of things. His decision is as follows. Cold and hot always move apart in opposite directions, and cannot co-exist; cold gathers in the place from which the hot power has departed, and conversely heat is in the place from which cold has been driven out. That what I say is true, and that each is driven in an opposite direction, will be
- 3 clear to you from the following. In winter, when there is cold above the earth, wells are warm, and no less so caves and all recesses beneath the earth, because the heat gathers itself there yielding to the cold which occupies the higher [places]. This [heat], when it has penetrated the lower [regions] and has introduced itself there as much as it can, is stronger to the extent that is denser. <However,> this hot [air] encounters <the cold air which has already collected beneath the earth.>² This, now gathered together and squeezed into a corner, necessarily yields its place to [the hot air].
- 4 p..251 The same thing happens in reverse, when a greater force of cold is carried into the caverns; whatever heat is hidden there yields to the cold, retreats into a narrow place and is driven on with great force, because nature does not allow the two to co-exist or remain in a single place. So, fleeing and wanting to escape by any means possible, it undermines and throws around whatever is closest
- 5 [to it]. So, before the earth is moved, it is usual for bellowsings to be heard, as the winds struggle in hidden places. There is no other way in which, as our Virgil puts it, “the earth” could “bellow beneath our feet and the high mountain ridges be moved,” if
- 6 this were not brought about by the winds. The to and fro of this battle are the same: heat gathers together and bursts out again; then cold is compressed and succumbs, but soon it will be more powerful. So while alternate force[s] run [this way and that] and the breath moves this way and that, the earth is shaken.

² Translating Hine’s conjectural supplement.

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alii <spiritui> *Oltramare*: hic alii *Alexander*: huic calidus <spiritus> *Codiñer Merino*: rigori cal<idi> vis *Vottero* 24 congregatus] conglobatus *Oltramare* angulum Ω: angustum ζ 25 e R: om. ZδθPu in del. *Madvig* 26 illic om. U: illi Z 29 proxima δρ: et proxima ZθPu 30 iactat ψ: iactet Z 32 Vergilius noster ZB: noster Vergilius AVθπ 33 celsa] coepta *Vergilius* 34 huius δθρ: huiusce Z: huic W¹ ut vid.: om. U 34–35 eadem: fit *Gercke*: desit Fπ, Z¹ ut vid.: defit Z²δ: deficit H: hae: fit *Madvig* 36 succidunt *Madvig*: succedunt Ω: secedunt *Castiglioni* futura mox Z 36 dum ergo δ 37 alterna vis] alter navis Z

54 Strabo, Geographica 1.3.4–6 (t.1 p.122.1–128.19 Radt 2002)

μάλιστα δέ φησι ζήτησιν παρασχεῖν πῶς ἐν δισχιλίοις καὶ τρισχιλίοις ἀπὸ θαλάττης σταδίοις κατὰ τὴν μεσόγαιαν ὁράται πολλαχοῦ κόγχων καὶ ὀστρέων καὶ χηραμύδων πλήθος καὶ λιμνοθάλατται, καθάπερ φησὶ περὶ τὸ ἱερὸν τοῦ Ἄμμωνος καὶ τὴν ἐπ’ αὐτοῦ ὁδὸν τρισχιλίων σταδίων οὔσαν· πολλὴν γὰρ εἶναι χύσιν ὀστρέων, ἅλας τε καὶ νῦν ἔτι εὕρισκεσθαι πολλοὺς, ἀναφυσήματά τε θαλάττης εἰς ὕψος ἀναβάλλειν· πρὸς ᾧ καὶ ναυάγια θαλαττίων πλοίων δείκνυσθαι, ἃ ἔφασαν διὰ τοῦ χάσματος ἐκβεβράσθαι, καὶ ἐπὶ στυλίδων ἀνακεῖσθαι δελφίνας ἐπιγραφὴν ἔχοντας Κυρηναίων θεωρῶν.

ταῦτα δ’ εἰπὼν τὴν Στράτωνος ἐπαινεῖ δόξαν τοῦ φυσικοῦ, καὶ ἔτι Ξάνθου τοῦ Λυδοῦ· τοῦ μὲν Ξάνθου λέγοντος ἐπὶ Ἀρταξέρξου γενέσθαι μέγαν αὐχμὸν ὥστ’ ἐκλιπεῖν ποταμοὺς καὶ λίμνας καὶ φρέατα· αὐτόν τε εἰδέναι πολλαχὲρ πρόσω ἀπὸ τῆς θαλάσσης λίθον τε κογχυλιώδη καὶ †τὰ† κτενώδεα καὶ χηραμύδων τυπώματα καὶ λιμνοθάλασσας ἐν Ἀρμενίοις καὶ Ματιηνοῖς καὶ ἐν Φρυγίᾳ τῇ κάτω, ὧν ἔνεκα πείθεσθαι τὰ πεδία ποτὲ θάλατταν

1–5 et 12–21 *Xanthus Lydus*, FrGH 765 F 12 *Jacoby* 1–11 *Eratosthenes*, fr.1B13 *Berger* 12–20 *Eratosthenes*, fr.1B14 *Berger* 20–28 *Tzetzes*, *Chiliades* 8.212.599–610 (p.324.20–325.3 *Leone* 1968), *Stratone nominato*; *Tzetzes tamen non solum Hellesponti et freti Gaditani sed etiam freti Regini mentionem Stratoni attribuit* 20–61 *Eratosthenes*, fr.1B15 *Berger*

2 τὴν om. P μεσόγαιαν sic C 4 φησὶ jq: φασὶ ABC 5 αὐτοῦ *Casorbi*: αὐτῷ codd.: αὐτὸ *Poppo* 7 πολλοὺς om. P ut vid. 8 post ἀναβάλλειν *lacunam statuit Radt* 9 διὰ τοῦ *Korais* 10 στυλίδων *Dicks*: στυλιδίων codd. 15 τε] δὲ q εἰδέναι] ἰδεῖν a 16 λίθους... κογχυλιώδεις ag^q 17 τὰ] ὄστρακα *Madvig*: an delendum? *Radt*: καὶ κτενώδεις vel καὶ κτενῶν *Korais* 17–18

→

54 Strabo, *Geography* 1.3.4–6 (vol.1 p.122.1–128.19 Radt 2002)

(Eratosthenes) says that the greatest question is how in many places inland, four or five hundred kilometres from the sea, a multitude of shells and oyster-shells and scallop-shells and lagoons are seen, as he says is the case around the temple of Ammon¹ and the road that leads to it which is 550 kilometres long. For there is a great profusion of oyster-shells, and much salt is found even now, and jets from the sea rise to a height;² in addition the wreckage of sea-going ships is displayed, which they say was cast ashore through the gulf, and on small pillars there are dolphins which are inscribed by ambassadors from Cyrene.

Saying this (Eratosthenes) approves the opinion of Strato the natural philosopher, and also of Xanthus of Lydia. For Xanthus says that in the time of Artaxerxes there was a great drought, so that rivers and lakes and wells ran dry, and that he himself knew that in many places far from the sea there was stone with the nature of shells, and comb-like (markings) and the impressions of scallop-shells, and lagoons in the territory of the Armenians and of the Matieni³ and in lower Phrygia, for which reason he believed that the plains had once been sea. Strato was even more

¹ At Siwa in the Libyan desert.

² Radt supposes a lacuna at this point.

³ In northeastern Media, south of Armenia.

γενέσθαι. τοῦ δὲ Στράτωνος ἔτι μᾶλλον ἀπτομένου τῆς 20
 αἰτιολογίας, ὅτι φησὶν οἶεσθαι τὸν Εὐξείνιον μὴ ἔχειν
 πρότερον τὸ κατὰ Βυζάντιον στόμα, τοὺς δὲ ποταμοὺς
 βιάσασθαι καὶ ἀνοῖξαι τοὺς εἰς αὐτὸν ἐμβάλλοντας, εἴτ'
 ἐκπεσεῖν τὸ ὕδωρ εἰς τὴν Προποντίδα καὶ τὸν Ἑλλήσ-
 ποντον. τὸ δ' αὐτὸ συμβῆναι καὶ περὶ τὴν καθ' ἡμᾶς 25
 θάλατταν· καὶ γὰρ ἐνταῦθα τὸν κατὰ στήλας ἐκραγῆναι
 πόρον, πληρωθείσης ὑπὸ τῶν ποταμῶν τῆς θαλάττης, κατὰ
 δὲ τὴν ἔκρυσιν ἀνακαλυφθῆναι τὰ τεναγώδη πρότερον.

φέρει δ' αἰτίαν πρῶτον μὲν ὅτι τῆς ἔξω θαλάττης καὶ
 τῆς ἐντὸς τοῦδαφος ἑτερόν ἐστιν, ἔπειθ' ὅτι καὶ νῦν ἔτι 30
 ταινία τις ὕφαλος διατέτακεν ἀπὸ τῆς Εὐρώπης ἐπὶ τὴν
 Λιβύην, ὡς ἂν <μῆ> μιᾶς οὔσης πρότερον τῆς τε ἐντὸς καὶ
 τῆς ἐκτός. καὶ βραχύτατα μὲν εἶναι τὰ περὶ τὸν Πόντον, τὸ
 δὲ Κρητικὸν καὶ Σικελικὸν καὶ Σαρδῶν πέλαγος σφόδρα
 p.124 βαθέα· τῶν γὰρ ποταμῶν πλείστων καὶ μεγίστων ρεόντων 35
 ἀπὸ τῆς ἄρκτου καὶ τῆς ἀνατολῆς, ἐκεῖνα μὲν ἰλὺος
 πληροῦσθαι, τὰ ἄλλα δὲ μένειν βαθέα. διὸ καὶ γλυκυτάτην
 εἶναι τὴν Ποντικὴν θάλατταν τὰς τ' ἐκρύσεις γίνεσθαι εἰς
 οὓς ἐγκέκλιται τόπους τὰ ἐδάφη. δοκεῖν δὲ καὶ χωσθῆναι
 τὸν Πόντον ὅλον εἰς ὕστερον, ἂν μένωσιν αἱ ἐπιρρύσεις 40
 τοιαῦται· καὶ γὰρ νῦν ἤδη τεναγίζειν τὰ ἐν ἀριστερᾷ τοῦ
 Πόντου, τὸν τε Σαλμυδησοῦν καὶ τὰ καλούμενα στήθη ὑπὸ
 τῶν ναυτικῶν τὰ περὶ τὸν Ἰστρον καὶ τὴν Σκυθῶν ἐρημίαν.
 τάχα δὲ καὶ τὸ τοῦ Ἀμμωνος ἱερὸν πρότερον ἐπὶ τῇ
 θαλάττῃ ὃν ἐκρύσεως γενομένης νῦν ἐν τῇ μεσογαίᾳ 45
 κεῖσθαι. εἰκάζει τε τὸ μαντεῖον εὐλόγως ἐπὶ τοσοῦτον
 γενέσθαι ἐπιφανές τε καὶ γνῶριμον ἐπὶ θαλάττῃ ὃν, τὸν δὲ
 ἐπὶ πολὺ οὕτως ἐκτοπισμὸν ἀπὸ τῆς θαλάττης οὐκ εὐλογον
 ποιεῖν τὴν νῦν οὖσαν ἐπιφάνειαν καὶ δόξαν· τὴν τε

38–43 fortasse conferendus Polybius, *Historiae* 4.39.9, 4.41.2, *Stratone non nom-
 inato: cf. etiam* 10

22 τοὺς δὲ σεισμοὺς καὶ τοὺς ποταμοὺς *perperam Lasserre, quem in errorem
 duxit Tzetzes* 603 31 ἐπὶ] εἰς P 32 μῆ *add. Casaubon: μιᾶς <οὐκ> Bernhardt*
 37 καὶ τὰ ἄλλα *p^{ac}* 39 ἐγκέκλινται P 44–45 τῇ θαλάττῃ P: τῆς θαλάττης
cett. 45 ὃν *om. B* νῦν *om. B* 46 τε] δὲ *Groskurd* 47 ἐπὶ] ἐν τῇ B δὲ
Bernhardt: τε codd.

concerned with explaining the causes, for he says that he thinks that the Black Sea did not previously have the opening at Byzantium, and that it was the rivers that flow into it that forced the opening, and then the water flowed out into the Sea of Marmara and the Hellespont. The same thing (he says) also happened with the Mediterranean; for here too the passage at the Pillars of Hercules⁴ was broken open, when the sea was filled by the rivers, and in [the course of] the outflow the parts that were previously covered by shallow water were uncovered.⁵

He⁶ gives as the reason first that the (depth of) the seabed in the Atlantic and in the Mediterranean is different, and then that there is still now an undersea ridge extending from Europe to Asia, as if the Mediterranean and the Atlantic were <not> previously a single sea. And (he says that) the Black Sea is very shallow, but the seas around Crete and Sicily and Sardinia are very deep.

p.124 For the greatest number of the largest rivers flow from the north and the east, and so the former is filled up with mud, while the others remain deep. This (he says) is why the Black Sea has the freshest water, and the outflows are to the places towards which the seabed slopes. And (he says) that it seems that the whole Black Sea will be silted up in the future, if the flow into it remains similar; for even now the parts on the left-hand side of the Black Sea have become shallows, Salmydessus and what the sailors call the “breasts” around the Danube and the Scythian wilderness.⁷ Perhaps indeed [he says]⁸ the temple of Ammon was previously on the coast, and is now inland because an outflow occurred. He conjectures that it was reasonable that the oracle should become so famous and well-known if it was on the sea, but that if it has for a long time been so remote from the sea this would not make

⁴ The Straits of Gibraltar.

⁵ Tzetzes, *Chiliades* 8.212.599–610, versifies Strabo’s report of Strato, but inappropriately adds the Straits of Messina to the Hellespont and the Straits of Gibraltar.

⁶ Strabo’s criticism in ch. 5 shows that the reference is still to Strato, not Eratosthenes.

⁷ Polybius, *Histories* 4.39.7–4.42.8, may perhaps derive from the same discussion by Strato, though he is not there named; with the present passage cf. in particular Polybius 4.39.9, 4.41.2, and **10** above for Polybius’ knowledge of Strato. Cf. Walbank 1951, 470–74 and 1957, 486–87. I am grateful to Simon Hornblower for drawing my attention to this.

⁸ Wehrli omits the rest of this paragraph. But we are still in reported speech, and there is no reason to doubt that it is still Strato’s views that are being reported.

Αἴγυπτον τὸ παλαιὸν θαλάττῃ κλύζεσθαι μέχρι τῶν ἐλῶν
 τῶν περὶ τὸ Πηλοῦσιον καὶ τὸ Κάσιον ὄρος καὶ τὴν
 Σιρβωνίδα λίμνην· ἔτι γοῦν καὶ νῦν κατὰ τὴν Αἴγυπτον τῆς
 ἀλμυρίδος ὀρυττομένης ὑφάμμους καὶ κογχυλιώδεις
 εὕρισκεσθαι τοὺς βόθρους, ὡς ἂν τεθαλαττωμένης τῆς
 χώρας καὶ τοῦ τόπου παντὸς τοῦ περὶ τὸ Κάσιον καὶ τὰ
 Γέρρα καλούμενα τεναγίζοντος, ὥστε συνάπτειν τῷ τῆς
 Ἑρυθρᾶς κόλπῳ· ἐνδούσης δὲ τῆς θαλάττης ἀνα-
 καλυφθῆναι, μέναι δὲ τὴν Σιρβωνίδα λίμνην, εἴτ'
 ἐκραγῆναι καὶ ταύτην ὥστε ἐλώδη γενέσθαι. ὡς δ' αὐτως
 καὶ τῆς Μοίριδος λίμνης τοὺς αἰγιαλοὺς θαλάττης μᾶλλον
 ἢ ποταμοῦ προσεοικέναι.

τὸ μὲν οὖν ἐπικλύζεσθαι ποτε πολὺ μέρος τῶν ἡπείρων
 ἐπὶ καιροὺς τινὰς καὶ πάλιν ἀνακαλύπτεσθαι δοίη τις ἄν-
 ὡς δ' αὐτως καὶ τὸ τοῖς ἐδάφεσιν ἀνώμαλον εἶναι τὴν γῆν
 ἅπασαν τὴν νῦν ὕφαλον, καθάπερ γε νῆ Δία καὶ τὴν
 ἔξαλον, ἐν ἣ οἰκοῦμεν, τοσαύτας γε δεχομένην ὅσας αὐτὸς
 Ἑρατοσθένους εἴρηκε μεταβολάς· ὥστε πρὸς γε τὸν Ξάνθου
 λόγον οὐδὲν ἂν ἔχοι τις προφέρειν ἄτοπον.

5 πρὸς δὲ τὸν Στράτωνα λέγοιτ' ἄν, ὅτι πολλῶν αἰτίων
 ὄντων ἀφείς ταῦτα τὰ μὴ ὄντα αἰτιάται. πρώτην γὰρ αἰτίαν
 φησίν, ὅτι τῆς ἐντὸς θαλάττης καὶ τῆς ἐκτὸς οὐ ταῦτὸν τὸ
 ἔδαφος καὶ ὁ βυθός. πρὸς γὰρ τὸ μετεωρίζεσθαι ταύτην καὶ
 ταπεινοῦσθαι καὶ ἐπικλύζειν τόπους τινὰς καὶ ἀναχωρεῖν
 ἀπ' αὐτῶν οὐ τοῦτό ἐστιν αἴτιον, ἄλλα καὶ ἄλλα ἐδάφη τὰ
 μὲν ταπεινότερα εἶναι τὰ δὲ ὑψηλότερα, ἀλλὰ τὸ τὰ αὐτὰ
 ἐδάφη ποτὲ μὲν μετεωρίζεσθαι ποτὲ δ' αὖ ταπεινοῦσθαι καὶ
 συνεξαίρειν ἢ συνενδιδόναι τὸ πέλαγος· ἐξαρθὲν μὲν γὰρ
 ἐπικλῦσαι ἄν, ταπεινωθὲν δὲ ἀναδράμοι ἂν εἰς τὴν ἀρχαίαν
 κατάστασιν. εἰ γὰρ <οὐχ> οὕτως, δεήσει πλεονασμῷ τῆς
 θαλάττης αἰφνιδίῳ γενομένῳ τὴν ἐπίκλυσιν συμβαίνειν,

49 ποιεῖν *a et* (εἰν *punctis notatum*) *P*: ποιεῖ *C*: *om.* *B* νῦν ἔτι οὐσαν *coní.*
Radt 52 Σιρβωνίδα *A*: Σερβωνίδα *BC*: [...]πβωνίδ *P* 55 [...]ε post Κάσιον
P^u: Κάσιόν τε *Lasserre* 58 Σερβωνίδα *B^{pc}* εἴτ'] ὡστ' εἴτ' *sic P* 59 ὥστε
om. P ὡς δ' αὐτως *Radt*: ὡς δ' αὐτως *P*: ὡς δ' αὐτως *cett.* 60 Μοίριδος
P: ἀλμυρίδος *cett.* 60 τοὺς αἰγιαλοὺς <αἰγιαλοῖς> *Korais*: τοὺς αἰγιαλοὺς
 <τοῖς αἰγιαλοῖς> *Meineke* 64 ὡς δ' αὐτως *Radt*: ὡς δ' αὐτως *P*: ὡς δ' αὐτως
cett. 66 γε *Dübner*, *P^u*: τε *AB^{pc}C*: .. *P^AP^C*: *om. B^{ac}* 67 ὁ Ἑρατοσθένης *P*
 68 προφέρειν *Korais*: προσφέρειν *codd.* 74 αἴτιον τὸ *O^s* 75 αὐτὰ τὰ *Ster-*
rett 77 συνεξαίρεσθαι *coní.* *Radt* 79 οὐχ *add. Kramer*: μὴ *add. Casaubon*
 δεήσει<εν ἄν> *Aly*

reasonable its present fame and reputation. And Egypt (he says) was at one time flooded by the sea as far as the marshes around Pelusium and the mountain Casium and the Sirbonian lake. At any rate even now in Egypt when the salty ground is dug up the pits are found to be sandy and full of shells, as if the region and the whole area around Casium and what is called Gerrha was covered by shallow water, so as to join the bay of the Red Sea. But when the sea retreated it was uncovered, but the Sirbonian lake remained; then this too was breached and became a marsh. In the same way the shores of Lake Moeris are more like [those] of the sea than of a river.

That a large part of the mainlands was once flooded by the sea for a certain time and then uncovered again one may grant, and in the same way that all the land that is now under the sea on the seabed is uneven, as indeed is also that above the sea on which we live, and that it has undergone as many changes as Eratosthenes
 p.126 himself has said. So one could not bring forward any charge of absurdity against what Xanthus says.

- 5 But against Strato one might say that, although there are many causes, he disregards these and gives unreal ones. The first cause he says is that the seabed and the depth of the Mediterranean is not the same. The fact that different parts of the seabed are higher and lower is not the reason why the sea rises and falls and washes over certain places and then retreats from them; rather, it is the fact that the same part of the sea-bed at one time rises and at another is lowered and makes the sea rise and fall with it. For when the sea is raised up it washes over (the land), but when it is lowered it goes back into its old position. For if it is <not> in this way [through a rise in the sea-bed], then it will be necessary that a flood occur when the sea is suddenly filled up,

καθάπερ ἐν ταῖς πλημμύρισιν ἢ ταῖς ἀναβάσεσι τῶν ποταμῶν, τοτὲ μὲν ἐπενεχθέντος ἐτέρωθεν τοτὲ δ' αὐξηθέντος τοῦ ὕδατος. ἀλλ' οὐθ' αἱ αὐξήσεις ἀθροαὶ καὶ αἰφνίδιοι γίνονται, οὐθ' αἱ πλημμυρίδες τοσοῦτον ἐπιμένουσι χρόνον οὐδ' ἄτακτοί εἰσιν, οὐδὲ κατὰ τὴν <ἡμ>-
 85
 ετέραν ἐπικλύζουσι θάλατταν οὐδ' ὅπου ἔτυχε. λοιπὸν οὖν αἰτιᾶσθαι τὸ ἔδαφος ἢ τὸ τῇ θαλάττῃ ὑποκείμενον ἢ τὸ ἐπικλυζόμενον, μᾶλλον δὲ τὸ ὕφαλον. πολὺ γὰρ εὐκινητότερον καὶ μεταβολὰς θάττους δέξασθαι δυνάμενον τὸ ἔνυγρον· καὶ γὰρ τὸ πνευματικὸν τὸ πάντων τῶν
 90
 τοιούτων αἴτιον πλεον ἐνταῦθα.

ἀλλ', ὡς ἔφη, τῶν τοιούτων ἀπεργαστικόν ἐστι παθῶν τὸ τὰ αὐτὰ ἐδάφη ποτὲ μὲν ἐξαίρεσθαι ποτὲ δὲ ὑφίζησιν λαμβάνειν, οὐ τὸ τὰ μὲν εἶναι ὑψηλὰ τὰ δὲ ἥττον· ὁ δὲ
 95
 τοῦτο λαμβάνει, νομίζων ὅπερ ἐπὶ τῶν ποταμῶν συμβαίνει τοῦτο καὶ ἐπὶ τῆς θαλάττης ἀπαντᾷ, τὸ ἀπὸ τῶν μετεώρων τόπων εἶναι τὴν ῥύσιν. οὐδὲ γὰρ ἂν τοῦ κατὰ Βυζάντιον ῥοῦ τὸ ἔδαφος ἡτιάτο, λέγων ὑψηλότερον τὸ τοῦ Εὐξείνου ἢ τὸ τῆς Προποντίδος καὶ τοῦ ἑξῆς πελάγους, ἅμα καὶ
 100
 αἰτίαν προστιθείς· ἀπὸ γὰρ τῆς ἰλῦος τῆς ἀπὸ τῶν ποταμῶν καταφερομένης πληροῦσθαι τὸν βυθὸν καὶ βραχὺν γίνεσθαι, διὰ τοῦτο δὲ καὶ ρεῖν εἰς τὰ ἐκτός. τὸν δ' αὐτὸν λόγον καὶ ἐπὶ τὴν ἡμετέραν θάλατταν σύμπασαν μεταφέρει πρὸς τὴν ἐκτός, ὡς καὶ ταύτης μετεωρότερον τοῦδαφος ποιούσης
 p.128 τοῦ ὑποκειμένου τῷ Ἀτλαντικῷ πελάγει· καὶ γὰρ αὕτη ἐκ
 105
 πολλῶν ποταμῶν πληροῦται καὶ τὴν ὑποστάθμην τῆς ἰλῦος δέχεται τὴν ἀνάλογον. ἐχρῆν οὖν καὶ τὸν ἔκρουν ὅμοιον γίνεσθαι τῷ κατὰ Βυζάντιον τὸν κατὰ στήλας καὶ τὴν Κάλπην.

ἀλλὰ τοῦτο μὲν ἐῷ (ἐροῦσι γὰρ κάκεῖ τοῦτο 110

99–102 fortasse conferendus Polybius, *Historiae* 4.39.9, *Stratone non nominato*: cf. *supra* 38–43

83 αἱ ἀθροαὶ BC 84 γίνονται *agj*q: δύνανται ABC: οἰδαίνονται Müller 85 οὐδὲ Radt: οὔτε *codd.* 85–86 ἡμετέραν *Casaubon*: ἐτέραν *codd.* 93 τὰ αὐτὰ *Korais*: αὐτὰ τὰ *codd.* 94 οὐ τὸ *Casaubon*: οὐ τῷ AC: οὕτω B 95 τοῦθ' ὑπολαμβάνει *Korais* 96 τῆς *om. B* 100 τὴν αἰτίαν B ἀπὸ (*bis*) ὑπὸ *Kramer* 103 μεταφέρει *agq*: μεταφέρειν ABC 104 ποιούσης] ἐχούσης *Casaubon* 105 τοῦ ὑποκειμένου *Bréquigny*: τὸ ὑποκείμενον *codd.*: <ἡ> τὸ ὑποκείμενον *Casaubon* 107 ἔκρουν *Radt*: εἴσρουν *codd.*

as when rivers overflow and rise, the water sometimes flowing in from elsewhere and sometimes being increased. But [these] increases do not come about all at once and suddenly, nor do the floods last for so long nor are they disorderly, nor do they cause floods in the Mediterranean nor anywhere else. So it remains to give as the cause the sea-bed, either that which is beneath the sea or that which is flooded, but rather that which is beneath the sea. For what is moist is much more easily moved and able to undergo changes; and indeed the element of breath, which is the cause of all such things, is more abundant in it.

But, as I said, what produces such effects is that the same parts of the sea-bed are sometimes lifted up and sometimes settle down, not [just] that some parts are higher than others. But [Strato] takes this [to be the reason], thinking that what happens in the case of rivers also occurs in that of the sea, that the flow is from the higher parts. [For] otherwise he would not blame the sea-bed for the outflow at Byzantium, saying that the bed of the Black Sea is higher than that of the sea of Marmara and of the sea outside [the Hellespont], also adding the reason; for [he says that] the deep part is filled up by the mud carried down by the rivers and has become shallow, and that this is why there is the outwards flow. But he transfers the same account to the whole of the Mediterranean in relation to the Atlantic, on the basis that this too causes its bed to

p.128 be higher than that beneath the Atlantic; for it too is filled up by many rivers and receives a corresponding muddy sediment. So it would be necessary for the outflow too at the Pillars of Hercules and Gibraltar to be similar to that at Byzantium.

But this I leave aside (for they will say that it does indeed

συμβαίνειν, περισπᾶσθαι δὲ ὑπὸ τῶν ἀμπώτεων καὶ τῶν
 πλημμυρίδων καὶ ἐπικρύπτεσθαι). ἐκεῖνο δὲ πυνθάνομαι τί
 6 ἐκώλυε, πρὶν ἀνεφγένην τὸ στόμα τὸ κατὰ Βυζάντιον,
 ταπεινότερον ὃν τὸ τοῦ Εὐξείνου ἔδαφος τοῦ τῆς
 Προποντίδος καὶ τῆς ἐξῆς θαλάττης πληρωθῆναι ὑπὸ τῶν 115
 ποταμῶν, εἴτε θάλατταν οὔσαν καὶ πρότερον εἴτε λίμνην
 μείζω τῆς Μαιώτιδος; εἰ γὰρ τοῦτο συγχωροῖτο, προ-
 σερήσομαι καὶ τοῦτο· ἄρα γε ἡ ἐπιφάνεια τοῦ ὕδατος
 ἐκείνου καὶ τοῦ τῆς Προποντίδος οὐχ οὕτως εἶχεν ὥστε,
 μέχρι μὲν ἡ αὐτὴ ἦν, μὴ βιάζεσθαι πρὸς ἔκρυσιν διὰ τὴν ἐξ 120
 ἴσης ἀντέρεισιν καὶ θλίψιν, ἐπειδὴ δὲ ὑπερεπόλασεν ἡ
 ἐντός, βιάσασθαι καὶ ἀπερᾶσαι τὸ πλεονάζον, ἐκ δὲ τούτου
 γενέσθαι σύρρουν τὸ ἔξω πέλαγος τῷ ἐντὸς καὶ τὴν αὐτὴν
 ἐπιφάνειαν ἐκείνῳ λαβεῖν (εἴτε θαλαττίῳ εἴτε λιμναίῳ μὲν
 πρότερον ὄντι, θαλαττίῳ δὲ ὕστερον, διὰ τὴν μίξιν καὶ τὴν 125
 ἐπικράτειαν); εἰ γὰρ καὶ τοῦτο δώσουσιν, ἡ μὲν ἔκρυσις
 οὐκ ἂν κωλύοιτο ἢ νῦν, οὐκ ἀπὸ ὑπερτέρου δὲ ἐδάφους
 οὐδὲ ἐπικλινούς, ὅπερ ἡξίου Στράτων.

122 ἀπερᾶσαι *Kramer*: ἀπεράσαι *codd.* 123 γενέσθαι *Korais*: γίγνεσθαι *AC*:
 γίνεσθαι *B*

PSYCHOLOGICA, PHYSIOLOGICA, ZOOLOGICA

55 Tabula inscriptionum ad opera psychologica, physiologica, zoo- logica spectantium

- 1 Περὶ τοῦ πνεύματος] Diogenes Laertius, Vitae 5.59
- 2 Περὶ φύσεως ἀνθρωπίνης] Diogenes Laertius, Vitae 5.59
- 3 Περὶ ζωογονίας] Diogenes Laertius, Vitae 5.59
- 4 Περὶ ὕπνου] Diogenes Laertius, Vitae 5.59
- 5 Περὶ ἐνυπνίων] Diogenes Laertius, Vitae 5.59

- happen there too, but is diverted and concealed by the ebb and flow of the tides). What I do ask is this: before the opening at
- 6 Byzantium was made, what prevented the bed of the Black Sea, [even if it was] lower than that of the sea of Marmara and the sea beyond it, from being filled up by the rivers, whether it was a sea previously, or [just] a lake larger than the Sea of Azov? And if this is granted, I will ask this further question too: was the surface of that water and that of the sea of Marmara not such that, while it was the same, it did not force a way to flow out, because the opposing pressures were the same, but when that inside overflowed, it forced the excess to flow out, and as a result of this the sea outside flowed together with that inside and came to have the same level as it (whether [that inside] was sea[-water] or lake[-water] beforehand, it was sea[-water] subsequently, because of the mixture and the prevailing [of salt water over fresh])? For if they grant this too, the outflow that there now is would not be prevented, [but it would] not [be] from [a sea] with a shallower or sloping bed, as Strato claimed.⁹

⁹ Strabo's argument is the following. Strato supposes (1) that the flow from the Black Sea to the Aegean is caused by the Black Sea being shallower. But suppose (2) that it was in fact deeper. Even so, it could be filled by rivers until the surface level of the water was the same. It is only (3) if the surface level of the water in the Black Sea became higher than that of the Aegean that there would be a flow from the former to the latter, and (4) this would happen even if the *bed* of the Black Sea were still lower than that of the Aegean, thus contradicting (1).

PSYCHOLOGY, PHYSIOLOGY, ZOOLOGY

55 List of titles referring to works on psychology, physiology, zoology

- 1 *On Breath*] Diogenes Laertius, *Lives* 5.59
- 2 *On the Nature of Man*] Diogenes Laertius, *Lives* 5.59
- 3 *On the Generation of Animals*] Diogenes Laertius, *Lives* 5.59
- 4 *On Sleep*] Diogenes Laertius, *Lives* 5.59
- 5 *On Dreams*] Diogenes Laertius, *Lives* 5.59

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- 6 Περὶ ὄψεως] Diogenes Laertius, Vitae 5.59
- 7 Περὶ αἰσθήσεως] Diogenes Laertius, Vitae 5.59
- 8 Περὶ χρωμάτων] Diogenes Laertius, Vitae 5.59
- 9 Περὶ νόσων] Diogenes Laertius, Vitae 5.59
- 10 Περὶ κρίσεων] Diogenes Laertius, Vitae 5.59
- 11 Περὶ ἰλίγγου καὶ σκοτώσεων] Diogenes Laertius, Vitae 5.59
(Reiske: Περὶ λιμοῦ καὶ σκοτώσεων MSS)
- 12 Περὶ ἐνθουσιασμοῦ] Diogenes Laertius, Vitae 5.59
- 13 Περὶ τροφῆς καὶ αὐξήσεως] Diogenes Laertius, Vitae 5.59
- 14 Περὶ τῶν ἀπορουμένων ζώων] Diogenes Laertius, Vitae 5.59
- 15 Περὶ τῶν μυθολογουμένων ζώων] Diogenes Laertius, Vitae 5.59

vide etiam **17** no.5 (Περὶ μίξεως) et no.6 (Περὶ δυνάμεων)

De anima

56 Tertullianus, De anima 15.1–3 (p.18.28–19.15 Waszink 1947)

- 1 inprimis an sit aliqui summus in anima gradus uitalis et sapientialis, quod ἡγεμονικόν appellant, id est principale, quia si negetur, totus animae status periclitatur. denique qui
p.19 negant principale, ipsam prius animam nihil censuerunt.
- 2 Messenius aliqui Dicaearchus, ex medicis autem Andreas et Asclepiades ita abstulerunt principale, dum in animo ipso uolunt esse sensus, quorum uindicatur principale. . . .
- 3 Sed plures et philosophi aduersus Dicaearchum, Plato Strato Epicurus Democritus Empedocles Socrates Aristoteles, et medici aduersus Andream et Asclepiaden, Herophilus Erasistratus Diocles Hippocrates et ipse

- 6 *On Sight*] Diogenes Laertius, *Lives* 5.59
- 7 *On Sense-Perception*] Diogenes Laertius, *Lives* 5.59
- 8 *On Colours*] Diogenes Laertius, *Lives* 5.59
- 9 *On Diseases*] Diogenes Laertius, *Lives* 5.59
- 10 *On Crises*] Diogenes Laertius, *Lives* 5.59
- 11 *On Vertigo and Dizziness*] Diogenes Laertius, *Lives* 5.59
(Reiske: *On Hunger and Dizziness* MSS)
- 12 *On Inspiration*] Diogenes Laertius, *Lives* 5.59
- 13 *On Nutrition and Growth*] Diogenes Laertius, *Lives* 5.59
- 14 *On Problematic Animals*] Diogenes Laertius, *Lives* 5.59
- 15 *On Mythological Animals*] Diogenes Laertius, *Lives* 5.59

See also **17** no.5 (*On Mixture*) and no.6 (*On Powers*)

Soul

56 Tertullian, *On the Soul* 15.1–3 (p.18.28–19.15 Waszink 1947)

- 1 First, whether there is some highest level of life and judgement in the soul, what they call the ruling, that is the principal, [part]. For if this were to be denied, the whole condition of the soul would
p.19 be at risk. Indeed those who deny [that there is] a principal [part] have already decided that the soul itself is nothing. Someone from
- 2 Messene [called] Dicaearchus, and among the doctors Andreas and Asclepiades, do away with the principal [part] in this way, while they want the mind to contain the senses, of which it is
- 3 claimed to *be* the principal [part]. . . . But there are more philosophers who oppose Dicaearchus, [namely] Plato, Strato, Epicurus, Democritus, Empedocles, Socrates¹ and Aristotle, and more doctors who oppose Andreas and Asclepiades, [namely] Herophilus,

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Soranus, iamque omnibus plures Christiani, qui apud deum de utroque deducimur, et esse principale in anima et certo in corporis recessu consecratum.

1–10 *Dicaearchus*, fr.25 *Mirhady* (fr.8h *Wehrli*)

1 aliquis *B Gelenius* 2 egemonicon A 3 quia *om. A* 5 aliquis *B Gelenius*
8 aduerdi ce arcum A 9 Socrates] *Xenocrates Diels DG p.204* 13 ducimur
A: docemur *Mercerus*: deducimus *Junius*

57 [Plutarchus], Placita 4.5 899A (BT t.5.2.1 p.117.10–14 Mau 1971)

Τί τὸ τῆς ψυχῆς ἡγεμονικὸν καὶ ἐν τίνι ἐστὶν
Πλάτων Δημόκριτος ἐν ὅλῃ τῇ κεφαλῇ.
Στράτων ἐν μεσοφρύφ.
Ἐρασίστρατος περὶ τὴν μήνιγγα τοῦ ἐγκεφάλου, ἣν
ἐπικρανίδα λέγει.

5

1–5 *Aetius*, 4.5.2 *Diels* (*DG p.391a1–7*); *Eusebius*, *Praep. Ev.* 15.61.2 (*GCS t.8.2*
[43.2] p.421.11–14 *Mras* 1956); *Theodoretus*, *Gr. Aff. Cur.* 5.22 (*BT p.128.8–13*
Raeder 1904), *qui omnes Stratonem nominaverunt* 2–5 *Erasistratus*, fr.40
Garofalo (p.73–74) 2 *Plato*, *Timaeus* 44D; *Democritus*, 68A105 *DK* 3 *Pollux*,
Onomasticon 2.226 (t.1 p.152.15–16 *Bethe*), *Stratone nominato* 4 *Galenus*, *De*
plac. Hippocr. et Plat. 7.3.6 (*CMG t.5.4.1.2.2 p.440.20–24 De Lacy*); *vide tamen*
quae ad translationem adnotavi

1 Περί ἡγεμονικόν *tantum Eusebius* 2 Ἰπποκράτης καὶ Δημόκριτος καὶ
Πλάτων ἐν ἐγκεφάλῳ *Theodoretus*

58 Tertullianus, De anima 15.4–5 (p.19.15–20.3 Waszink 1947)

- 4 si enim scrutatorem et dispectorem cordis deum legimus, si
etiam propheta eius occulta cordis traducendo probatur . . .
simul utrumque dilucet, et esse principale in anima, quod
intentio diuina conueniat, id est uim sapientialem atque
uitalem (quod enim sapit, uiuidum est), et in eo thesauro
- 5 corporis haberi, ad quem deus respicit, ut neque
extrinsecus agitari putes principale istud secundum
Heraclitum, neque per totum corpus umentari secundum
Moschionem, neque in capite concludi secundum
Platonem, neque in uertice potius praesidere secundum

5

10

Erasistratus, Diocles, Hippocrates and Soranus himself, and more of us Christians who oppose them all, we who are led by God concerning both [claims], both that there is a principal [part] in the soul and that it has been hallowed in a specific housing in the body.

¹ Emended by Diels to “Xenocrates.”

- 57** Pseudo-Plutarch, *The Opinions of the Philosophers* 4.5 899A (BT vol.5.2.1 p.117.10–14 Mau 1971)

What the ruling [part] of the soul is, and where it is.
 Plato and Democritus [say it is] in the whole of the head.
 Strato, in the space between the eyebrows.
 Erasistratus, in the membrane [surrounding] the brain, which he calls *epikranis*.¹

¹ Galen, *On the Opinions of Hippocrates and Plato* 7.3.6 reports this view held by Erasistratus, but goes on to say that Erasistratus later revised it and located reason in the brain itself.

- 58** Tertullian, *On the Soul* 15.4–5 (p.19.15–20.3 Waszink 1947)

- 4 For if we read that God “examines and considers the heart,”¹ and if the proof of His prophet is by proclaiming the secrets of the heart . . . both [points] are clear together, both that there is a principal [part] in the soul, which the divine attention visits, that is a power which [is the cause of] wisdom and of life (for what has wisdom is alive [*a fortiori*]), and also that it is kept in that treasure-chamber
 5 in the body to which God looks. So you should not think that this principal [part] is driven from outside, according to Heraclitus,² nor that it is a breath passing through the whole body, according to Moschion, nor that it is confined in the head, according to Plato, nor that it rather occupies a pre-eminent position in the top

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Xenocraten, neque in cerebro cubare secundum Hippocraten, sed nec circa cerebri fundamentum, ut Herophilus, nec in membranulis, ut Strato et Erasistratus, nec in superciliorum meditullio, ut Strato Physicus, nec in tota lorica pectoris, ut Epicurus, sed quod et Aegyptii
p.20 renuntiauerunt et qui diuinarum commentatores uidebantur, ut et ille uersus Orphei uel Empedoclis:
namque homini sanguis circumcordialis est sensus.

1 *Sapientia Salomonis* 1:6 6–15 Erasistratus, fr.41 Garofalo (p.74) 18 *Empedocles*, 31B105.3 DK

1 despectorem A 3 quo A 5 sapit] rapit B marg. 6 ad quem] atque A 7 intrinsecus Berryman 13 membranullis A corr.: membranula eius susp. Junius Strato et del. Diels DG p.204 15 sed <in corde habere sedem> quod et coni. Reifferschneid: lacunam indicat Kroymann: sed et quod Pamelius: secundum quod et Hartel 16 et] ei B Gelenius: ii Ursinus: ut Hartel diuinorum Junius: diuinarum litterarum Reifferschneid: diuinarum rerum Kroymann com- memoratores A B marg. 18 hominis B Gelenius circumcordiali'st Junius

59 Tertullianus, De anima 14.3–5 (p.18.4–27 Waszink 1947)

3 huiusmodi autem non tam partes animae habebuntur quam uires et efficaciae et operae, sicut de quibusdam et Aristoteles iudicauit. non enim membra sunt substantiae animalis, sed ingenia, ut motorium, ut actorium, ut
cogitatorium, et si qua in hunc modum distinguunt, ut et
ipsi illi quinque notissimi sensus, uisus auditus gustus
tactus odoratus. quibus omnibus etsi certa singulis
domicilia in corpore determinauerunt, non idcirco haec
quoque distributio animae ad animae sectiones pertinebit,
4 quando ne ipsum quidem corpus ita diuidatur in membra, 10
ut isti uolunt animam. atquin ex multitudine membrorum
unum corpus efficitur, ut concretio sit potius ipsa diuisio.
specta portentosissimam Archimedis munificentiam,
organum hydraulicum dico, tot membra, tot partes, tot
compagines, tot itinera uocum, tot compendia sonorum, tot
15 commercia modorum, tot acies tibiatarum, et una moles erunt
omnia. sic et spiritus, qui illic de tormento aquae anhelat,

4 altorium, i.e. θρεπτικόν, susp. La Cerda 5 distinguunt, ut] distinguuntur Junius 6 in quinque Gelenius novissimi A

of the head, according to Xenocrates, nor that it rests in the brain, according to Hippocrates, nor yet that it is around the base of the brain, as Herophilus [thinks], nor in the membranes [around the brain], like Strato and³ Erasistratus, nor in the mid-space between the eyebrows, like Strato the Naturalist, nor in the whole jerkin of the chest, like Epicurus; but rather what has been reported both
p.20 by the Egyptians and by those who seemed to be commentators on divine matters, as also that verse by Orpheus or Empedocles: “For indeed it is the blood around the heart which is sensation for a human being.”

¹ *Wisdom of Solomon* 1:6.

² Polito 2004, 109–11 notes the parallels between what follows and the doxography in **61** below, and argues that both have a common source (in the case of Tertullian, through the intermediary of Soranus) which itself in turn had a common source with **57** in the *Vetusta Placita*.

³ Diels here deletes the words “Strato and.” The mention of two Stratos in the transmitted text is, along with **1.67** above, the primary basis for distinguishing between Strato the head of the Lyceum and Strato the medical follower of Erasistratus; see below, Appendix.

59 Tertullian, *On the Soul* 14.3–5 (p.18.4–27 Waszink 1947)

- 3 But [faculties] of this sort will be considered not so much parts of the soul as powers and efficacies and operations, as Aristotle too judged concerning some of them. For they are not parts of the substance of the soul, but natural abilities, like what produces movement, what produces action, what produces thought, and any that they distinguish in this way, like those five senses which are so well known, sight, hearing, taste, touch and smell. Even if they have identified certain dwelling-places in the body for all of these individually, it does not for this reason [follow that] this distribution of the soul too will apply to [separate] divisions of the
- 4 soul, seeing that not even the body itself is divided into separate parts in the way that they want the soul to be. Rather, the multitude of parts produce a single body, so that the “division” is itself rather a growing together. Consider the very impressive benefit [we have been given] by Archimedes, I mean the water-organ: so many members, so many parts, so many connections, so many routes for the voices, so many combinations of sounds, so many interactions of modes, so many rows of pipes; and all [these] will [turn out to be] a single structure. Just so the breath, which gasps

non ideo separabitur in partes, quia per partes administratur, substantia quidem solidus, opera uero diuisus. non longe hoc exemplum est a Stratone et Aenesi-
 demo et Heraclito; nam et ipsi unitatem animae
 tumentur, quae in totum corpus diffusa et ubique ipsa, uelut
 flatus in calamo per cauernas, ita per sensuality uariis modis
 emicet, non tam concisa quam dispensata. haec omnia
 quibus titulis nuncupentur et quibus ex se diuisionibus
 detineantur et quibus in corpore metationibus seques-
 trentur, medici potius cum philosophis considerabunt;
 nobis pauca conuenient.

20 est om. A 21 *ipsi A 22 defusa A 26 detineantur A *B^{marg}*: deriuentur
B Gelenius: distineantur *Kroymann* 27 cum philosophis] tum philosophi
Gelenius

De intellectu ac sensibus

60 Sextus Empiricus, *Adversus mathematicos* 8.11–12 (BT t.2
 p.106.17–107.9 Mutschmann 1914)

Ἄλλ' ἢ μὲν πρώτη περὶ τἀληθοῦς διαφωνία τοιαύτη τις
 ὑπῆρχεν· ἣν δὲ καὶ ἄλλη τις παρὰ τούτοις διάστασις, καθ'
 ἣν οἱ μὲν περὶ τῷ σημαινόμενῳ τὸ ἀληθές τε καὶ ψεῦδος
 ὑπεστήσαντο, οἱ δὲ περὶ τῇ φωνῇ, οἱ δὲ περὶ τῇ κινήσει τῆς
 διανοίας. καὶ δὴ τῆς μὲν πρώτης δόξης προεστήκασιν οἱ
 ἀπὸ τῆς Στοᾶς, τρία φάμενοι συζυγεῖν ἀλλήλοις, τό τε
 12 σημαινόμενον καὶ τὸ σημαῖνον καὶ τὸ τυγχάνον, ὧν
 σημαῖνον μὲν εἶναι τὴν φωνήν, οἷον τὴν Δίων,
 σημαινόμενον δὲ αὐτὸ τὸ πρᾶγμα τὸ ὑπ' αὐτῆς δηλούμενον
 καὶ οὗ ἡμεῖς μὲν ἀντιλαμβανόμεθα τῇ ἡμετέρᾳ
 10 παρυφισταμένου διανοία, οἱ δὲ βάρβαροι οὐκ ἐπαῖουσι
 καίπερ τῆς φωνῆς ἀκούοντες, τυγχάνον δὲ τὸ ἐκτὸς
 ὑποκείμενον, ὥσπερ αὐτὸς ὁ Δίων. τούτων δὲ δύο μὲν εἶναι

2–19 SVF 2.166

1 τἀληθοῦς *Bekker*: ἀληθοῦς *G* 2 παρὰ τούτοις] περὶ τούτου *dubitans Kayser* 3 τῷ σημαινόμενῳ *Bekker*: τὰ σημαινόμενα *G*

there because it is forced by the water, will not be separated into [different] parts [just] because it is conducted through [different] parts; it is united in its substance, though divided in its action. This analogy is not far removed from Strato and Aenesidemus and Heraclitus; for they too preserve a unity of the soul, which is spread throughout the whole body and everywhere itself darts out through the sense-organs in different ways, as the breath in a pipe¹ does through the holes; it is not so much divided up as distributed. By what names all these [faculties] are to be called, and in what distinct [parts of the body] they are kept apart from each other, and in what designated places in the body they are separated, the doctors will rather consider along with the philosophers; for us a few [points] will be enough.

¹ It is not clear whether the analogy of the organ is being attributed to these earlier thinkers too, or whether the reference is now to a pipe as an individual instrument and not to the pipe of an organ. For the linking of Strato, Aenesidemus and Heraclitus compare 61 and nn.

Thought and Sensation

- 60 Sextus Empiricus, *Against the Professors* 8.11–12 (BT vol.2 p.106.17–107.9 Mutschmann 1914)

The first dispute about truth was something like this; but there was another disagreement among them, in which some supposed that truth and falsity applied to what is signified, others to the utterance, and others to the movement of thought. The first opinion was championed by the Stoics, who say that three things are linked with each other, what is signified, what signifies and
 12 the object. What signifies is the utterance, for example “Dion”; what is signified is the thing itself which is indicated by this and which we grasp when it becomes present to our thought, while the barbarians do not understand it even though they hear the utterance; the object is the thing that exists externally, like Dion himself. Of these two are bodies, the utterance and the object, but

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σώματα, καθάπερ τὴν φωνὴν καὶ τὸ τυγχάνον, ἓν δὲ
 ἀσώματον, ὥσπερ τὸ σημαινόμενον πρᾶγμα, καὶ λεκτόν, 15
 ὅπερ ἀληθές τε γίνεται ἢ ψεῦδος. καὶ τοῦτο οὐ κοινῶς πᾶν,
 ἀλλὰ τὸ μὲν ἑλλιπές, τὸ δὲ αὐτοτελές. καὶ τοῦ αὐτοτελοῦς
 τὸ καλούμενον ἀξίωμα, ὅπερ καὶ ὑπογράφοντές φασιν
 p.107 “ἀξίωμά ἐστιν ὃ ἐστιν ἀληθές ἢ ψεῦδος.”

οἱ δὲ περὶ τὸν Ἐπίκουρον καὶ Στράτωνα τὸν φυσικὸν 20
 δύο μόνον ἀπολείποντες, σημαῖνόν τε καὶ τυγχάνον,
 φαίνονται τῆς δευτέρας ἔχεσθαι στάσεως καὶ περὶ τῇ φωνῇ
 τὸ ἀληθές καὶ ψεῦδος ἀπολείπειν. ἡ μὲν γὰρ ὑστάτη δόξα
 (λέγω δὲ τὴν ἐν τῷ κινήματι τῆς διανοίας τὰληθές
 ὑποτιθεμένην) σχολικῶς ἔοικε πλάττεσθαι. 25

17 τὸ μὲν ἑλλιπές <οὐ>, τὸ δὲ αὐτοτελές <μόνον> *Kayser* 20 δὲ *om. AB*
 24 δὲ] δὴ *ABR* 25 πλάττεσθαι *Bekker*: πλάζεσθαι *G*

61 **Sextus Empiricus, Adversus Mathematicos 7.348–50 (BT t.2
 p.80.1–20 Mutschmann 1914)**

καὶ μὴν οὐδὲ ἡ διάνοια. εἴπερ γὰρ ἐπιγνώμων ἐστὶ
 τὰληθοῦς ἡ διάνοια, πρότερον ὥφειλεν ἑαυτὴν
 ἐπιγινώσκειν· καὶ ὡς ὁ ἀρχιτέκτων κρίνει τό τε εὐθὺ καὶ
 στρεβλὸν καὶ χωρὶς τοῦ ἐπιβάλλειν τῇ κατασκευῇ τῶν
 κριτηρίων, οἷον τῇ τοῦ κανόνος καὶ τῇ τοῦ διαβήτου, 5
 οὕτως ἔχρην καὶ τὴν διάνοιαν, εἴπερ διακριτική ἐστὶ τοῦ
 ἀληθοῦς καὶ τοῦ ψεύδους, πολλῶ πρότερον τῇ ἑαυτῆς
 φύσει συνεπιβάλλειν δι’ ἣν, οὐσίᾳ τῇ ἐξ ἧς ἐστὶ, τόπῳ τῷ
 ἐν ᾧ πέφυκε, τοῖς ἄλλοις ἅπασιν. οὐ πάνυ δὲ γε τὰ τοιαῦτα

1 γινώμων *N* 3 γινώσκειν *N* ὁ *om. L* 6 διακριτικόν *ς*

one is incorporeal, as is the thing that is indicated, and is a thing that can be said;¹ and it is this that becomes true or false – and
p.107 this does not apply alike to every [thing that can be said], but one [thing that can be said] is incomplete, another complete,² and among the complete [what can be true or false] is what is called a proposition,³ which they indicate when they say “a proposition is what is true or false.”

The followers of Epicurus and of Strato the naturalist retain only two things, what signifies and the object, and appear to hold the second position and to leave truth and falsity to the utterance. For the last opinion (I mean the one which locates truth in the movement of thought) seems to have been contrived in school discussion.⁴

¹ That is, a Stoic *lekton* or “sayable”; what a word or sentence signifies — what we *say* when we utter it — as opposed to the concrete object or physical event to which it refers.

² “Complete” *lekta* or “sayables” are signified by complete sentences; incomplete ones by verbs in isolation, for example “is running” (but not, according to Stoic doctrine, by nouns, in spite of Sextus’ use of the proper name “Dion” as an example; the reason is presumably that nouns were thought of as naming things rather than as saying something about something in the way verbs do. See LS 33 and Frede 1977, 347–52.

³ For not all complete sayables are true or false; what is signified by an assertion is, but not what is signified by a question. “Socrates is mortal” is true, but it would be inappropriate to say that “Is Socrates mortal?” is true.

⁴ That is, invented for the sake of argument, rather than being actually held by anyone.

61 Sextus Empiricus, *Against the Professors* 7.348–50 (BT vol.2 p.80.1–20 Mutschmann 1914)

And indeed neither is thought [the criterion of truth]. For if thought judges the truth, it ought first of all to have judged itself. And just as the master-craftsman judges the straight and the curved even without applying his tools for judging, such as the line and the rule, just so thought too, if it is able to distinguish between the true and the false, ought much sooner to apply itself to its own nature on account of which [it exists], to the substance of which [it consists], to the place in which it is naturally [found],
349 and to all the rest. But it is completely unable to observe these

144 **Strato of Lampsacus**

349 συνορᾶν δύναται, εἶγε οἱ μὲν μηδέν φασιν εἶναι αὐτὴν 10
 παρὰ τὸ πῶς ἔχον σῶμα, καθάπερ ὁ Δικαίαρχος, οἱ δὲ εἶναι
 μὲν ἔλεξαν, οὐκ ἐν τῷ αὐτῷ δὲ τόπῳ περιέχεσθαι, ἀλλ' οἱ
 μὲν ἐκτὸς τοῦ σώματος, ὡς Αἰνησίδημος κατὰ
 Ἡράκλειτον, οἱ δὲ ἐν ὅλῳ τῷ σώματι, καθάπερ τινὲς κατὰ 15
 Δημόκριτον, οἱ δὲ ἐν μέρει τοῦ σώματος, ὧν πάλιν
 πολυσχιδεῖς εἰσιν αἱ γινώμαι. καὶ οἱ μὲν διαφέρειν αὐτὴν
 τῶν αἰσθήσεων, ὡς οἱ πλείους, οἱ δὲ αὐτὴν εἶναι τὰς
 350 αἰσθήσεις, καθάπερ διὰ τινων ὁπῶν τῶν αἰσθητηρίων
 προκύπτουσιν, ἥς στάσεως ἤρξε Στράτων τε ὁ φυσικὸς καὶ
 Αἰνησίδημος. οὐκ ἄρα κριτήριόν ἐστιν ἡ διάνοια. 20

17–19 *Lucretius* 3.350–69, *et Cicero, Tusculanae disputationes* 1.46, *quorum neuter Stratonem nominat*

8 δι' ἣν *Gen.*: δι' ὅν ς : διογουσία *sic NLE* 8–9 φύσει—ἐν ᾧ] φύσει ἐπιβάλλειν,
 συνεπιβάλλειν δὲ τῇ οὐσίᾳ, ἐξ ἧς ἐστι, τῷ τόπῳ ἐν ᾧ *Kayser* 8 ἐξ ἧς] ἐξ ἧς
 ς 9 τὰ *om.* ς 12 ἔλεξαν *NLE*: ἔλεγον ς τόπῳ ς : τούτῳ *NLE* 18 ὁπῶν
Fabricius: τόπων ς

things, seeing that some say that it¹ is nothing besides body in a certain state, as does Dicaearchus, while others say that it exists, but not that it is contained in the same place; some [say that it is] outside the body, like Aenesidemus following Heraclitus,² others that it is in the whole of the body, as some people do following Democritus,³ and others that it is in a part of the body. The opinions of these again are divided in many ways. Some say that it is different from the senses, as the majority do, others that it is the senses, peeping out through the sense-organs as if through apertures;⁴ this view was originated⁵ by Strato the naturalist and Aenesidemus.⁶ So thought is not the criterion.

¹ Polito 2004, 112–13, comparing this to 58 (q.v.), argues that the original common source of the two passages here referred to the ruling principle, and that “thought” is Sextus’ modification.

² Or rather, reinterpreting him: Polito 2004, 112. On the report see Polito 2004, 108–18 arguing that Aenesidemus is interpreting Heraclitus, like other Presocratics, as identifying thought and sensation and making both alike dependent on factors outside ourselves, and that this may reflect the influence of Aristotle through Strato; Aenesidemus’ contribution is to see this as an argument for scepticism.

³ Polito 2004, 110 sees a reference to Moschion (cf. 58), Sextus omitting the name because of its obscurity.

⁴ Polito 2004, 109 interprets this as “pipe-holes,” in the light of 59, and sees a reference to *pneuma* extending through the nerves to the sense-organs (ibid. 120–29). Gottschalk compares Cicero, *Tusculan Disputations* 1.46 (his fragment 11, where Strato is not named); cf. Polito 2004, 124, noting that Cicero does however refer to “naturalists,” *physici*. The view reported in Cicero also appears at Lucretius, 3.359–69.

⁵ Or “this faction was led.”

⁶ See Polito 2004, 119–39. The view attributed to Aenesidemus here at first seems to conflict with that at n.1 above; Hankinson 1995, 337 n.28 argues that the first report refers to Heraclitus’ divine reason, the second to human reason; Bett 2000, 227–28 and n.88 suggests that Sextus has attributed the second view to Aenesidemus as well as to Strato, when in fact the former was only reporting the latter. But Polito shows that the two views are in fact consistent; Aenesidemus takes Strato’s view of thought and sensation and uses it to interpret Heraclitus’ linking of thought to what is outside ourselves (cf. Sextus *M.* 7.129–30 = Heraclitus 22A16 DK), seeing this as an argument for scepticism. above n.2, and Polito 2004, 129.

- 62** Plutarchus, *De sollertia animalium* 3 960e–961a (BT t.6.1 p.16.5–17.2 Hubert et Drexler 1959)

τὴν μὲν οὖν γνῶσιν ἀμφοῖν ὁμοίως ἢ αἰσθήσις ἐκάστω
 παρέχει· τὰς δ' ἐπομένας τῇ αἰσθήσει τῶν μὲν ὠφελίμων
 λήψεις καὶ διώξεις, διακρούσεις δὲ καὶ φυγὰς τῶν
 ὀλεθρίων καὶ λυπηρῶν οὐδεμία μηχανὴ <παρεῖναι> τοῖς μὴ
 F λογίζεσθαι τι καὶ κρίνειν καὶ μνημονεύειν καὶ προσέχειν 5
 πεφυκόσιν· ἀλλ' ὧν ἂν ἀφέλης παντάπασι προσδοκίαν
 μνήμην πρόθεσιν παρασκευὴν τὸ ἐλπίζειν τὸ δεδοικέναι τὸ
 ἐπιθυμεῖν τὸ ἀσχάλλειν, οὕτ' ὁμμάτων ὄφελος οὐδὲν αὐτοῖς
 παρόντων οὕτ' ὥτων· αἰσθήσεώς τε πάσης καὶ φαντασίας
 τὸ χρώμενον οὐκ ἐχούσης ἀπηλλάχθαι βέλτιον ἢ πονεῖν καὶ 10
 961 λυπεῖσθαι καὶ ἀλγεῖν, ᾧ διακρούσεται ταῦτα μὴ παρόντος.
 καίτοι Στράτωνός γε τοῦ φυσικοῦ λόγος ἐστὶν ἀπο-
 δεικνύων ὡς οὐδ' αἰσθάνεσθαι τὸ παράπαν ἄνευ τοῦ
 νοεῖν ὑπάρχει· καὶ γὰρ γράμματα πολλάκις ἐπιπορευο-
 μένους τῇ ὄψει καὶ λόγοι προσπίπτοντες τῇ ἀκοῇ 15
 διαλανθάνουσιν ἡμᾶς καὶ διαφεύγουσι πρὸς ἑτέροις τὸν
 νοῦν ἔχοντας· εἴτ' αὐθις ἐπανήλθε καὶ μεταθεῖ καὶ διώκει
 τῶν προἰεμένων ἕκαστον ἀναλεγόμενος· ἥ καὶ λέλεκται
 νοῦς ὁρῇ καὶ νοῦς ἀκούει, τᾶλλα κωφὰ καὶ τυφλά,
 p.17 ὡς τοῦ περὶ τὰ ὄμματα καὶ ὤτα πάθους, ἂν μὴ παρῇ τὸ 20
 φρονοῦν, αἰσθήσιν οὐ ποιοῦντος.

1–21 *Porphyrius, De abstinentia* 3.21.6–8 (CB t.2 p.178.6–179.2 Bouffartigue et Patillon 1979), *Stratone nominato* 18–21 [Aristoteles], *Problemata* 11.33 903a19–21 19 *Epicharmus*, B12 DK, PCG fr.216 Kassel et Austin; *Theodoretus, Gr.aff. cur.* 1.88 (BT p.25.23 Raeder 1904)

4 παρεῖναι *add. Hubert ex Porphyrio* 6 ἀλλ' ὧν ἂν] ὧν γὰρ ἂν *Porphyrius* ἀλλ' *om. B* ὧν *om. kZ* ἂν *om. Ψ(non k)FvΠ* ὧν *in ἂν mutavit A² ut vid.* 7 πρόσθεσιν *Porphyrii codd.* 11 ᾧ] καὶ *Porphyrii codd.* διακρούεσθαι *Porphyrii codd.* 14 γὰρ *om. Porph.* 18 προἰεμένων] προειρημένων *Porphyrius*: παριεμένων *Emperius*: προειμένων *post Xylander Kronenberg*: παρειμένων *Nauck* 19 ὁρᾷ *Porph.* καὶ *om. Porph.* τᾶλλα *Theodoretus*: τὰ δ' ἄλλα *Plutarchi codd., Porph.* τυφλά καὶ κωφὰ *ZuB*

Cf. etiam **47** (Epiphanius, *De fide* 9.37)

- 62** Plutarch, *On the Intelligence of Animals* 3 960e–961a (BT vol.6.1 p.16.5–17.2 Hubert and Drexler)

Sensation provides recognition of both [beneficial and harmful things] to each [creature] in the same way. But there is no way in which what follows on the sensation, taking and pursuit in the case of beneficial things, warding off and avoidance in that of destructive and painful ones, can be present in [creatures] that
 F do not naturally calculate and discern and remember and attend. Those [creatures] that you deny have any expectation, memory, purpose, preparation, hope, fear, desire or distress at all, gain no benefit from possessing eyes or ears; it would be better [for them] to be free from all sensation and imagination when they do not have [anything to] make use [of these], rather than to experience
 961 effort and distress and pain, since they do not have what wards these off. And indeed there is an argument of Strato the naturalist which shows that not even sensation is present at all in the absence of mind. For frequently we fail to notice letters when we traverse them with our sight and words that fall on our ears, because we have our mind on something else; and then again [the mind] returns and runs after and pursues and gathers up each of the things that it cast away. This is why it is said that “Mind sees
 p.17 and hears, the rest are deaf and blind,”¹ since the experience in the eyes and ears does not produce sensation if what thinks is not present.

¹ Epicharmus, fr.12 DK; fr.214 in Kassel and Austin, *Poetae Comici Graeci*.

See also **47** (Epiphanius, *On Faith* 9.37)

63A [Plutarchus], Placita 4.23 904C (BT t.5.2.1 p.131.12–15 Mau 1971)

Στράτων καὶ τὰ πάθη τῆς ψυχῆς καὶ τὰς αἰσθήσεις ἐν τῷ ἡγεμονικῷ οὐκ ἐν τοῖς πεπονθόσι τόποις συνίστασθαι. ἐν γὰρ ταύτῃ κείσθαι τὴν ὑπομονήν, ὥσπερ ἐπὶ τῶν δεινῶν καὶ ἀλγεινῶν [καὶ ὥσπερ ἐπὶ τῶν ἀνδρείων καὶ δειλῶν].

1–4 *Aetius* 4.23.3 *Diels* (DG p.415a1–7); [*Galenus*], *Hist. Phil.* 104 (DG p.639.19–21 *Diels*)

2–4 ἐν γὰρ ταύτῃ—καὶ δειλῶν] *lacunam, post quam* τῶν δεινῶν καὶ ἀλγεινῶν τὴν ἐνέργειαν *tantum*, [*Galenus*] 3 ταύτῃ] τοῦτω *coni. Zeller, reiecit Diels* **63B**.9 *conferens* ἐπὶ τῶν *om. α*, ἐπὶ *suppl. α* *margin.*: ἐπὶ ἀνδρείων *EA* 4 καὶ ὥσπερ—δειλῶν *del. Diels*

63B Plutarchus(?), *De libidine et aegritudine* 4 (BT t.6.3 p.53.10–54.9 Ziegler et Pohlenz 1966)

ἔδει μὲν τοὺς δογματικοὺς καὶ καταληπτικοὺς εἶναι φιλοσόφους φάσκοντας, εἰ μὴ περὶ ἄλλο τι, τὴν γε τῶν παθῶν ἐνάργειαν ὁμολογεῖν ἀλλήλοις καὶ συμφέρεσθαι. πολὺς δ' αὐτῶν ὁ παράλογός ἐστιν. οἱ μὲν γὰρ ἅπαντα συλλήβδην ταῦτα τῇ ψυχῇ φέροντες ἀνέθεσαν, ὥσπερ 5 Στράτων ὁ φυσικός, οὐ μόνον τὰς ἐπιθυμίας, ἀλλὰ καὶ τὰς λύπας, οὐδὲ τοὺς φόβους καὶ τοὺς φθόνους καὶ τὰς ἐπιχαιρεκακίας, ἀλλὰ καὶ πόνους καὶ ἡδονὰς καὶ ἀλγηδόνας καὶ ὅλως πᾶσαν αἴσθησιν ἐν τῇ ψυχῇ συνίστασθαι φάμενος, καὶ τῆς ψυχῆς τὰ τοιαῦτα πάντ' 10 εἶναι, μὴ τὸν πόδα πονούντων ἡμῶν, ὅταν προσκρούσωμεν, μηδὲ τὴν κεφαλὴν, ὅταν κατὰξωμεν, μη<δὲ> τὸν δάκτυλον, ὅταν ἐκτέμωμεν· ἀναίσθητα γὰρ τὰ λοιπὰ πλὴν τοῦ ἡγεμονικοῦ, πρὸς ὃ τῆς πληγῆς ὀξέως ἀναφερομένης τὴν αἴσθησιν ἀλγηδόνα καλοῦμεν. ὥς δὲ 15 τὴν φωνὴν τοῖς ὤσιν αὐτοῖς ἐνηχοῦσαν ἔξω δοκοῦμεν εἶναι, τὸ ἀπὸ τῆς ἀρχῆς ἐπὶ τὸ ἡγεμονικὸν διάστημα τῇ αἰσθήσει προσλογιζόμενοι, παραπλησίως τὸν ἐκ τοῦ

3 ἐνάργειαν *Pohlenz*: ἐνέργειαν *Ω* 6–7 οὐ μόνον—τοὺς φθόνους *om. i* 7 φόβους καὶ τοὺς *om. k*, *add. k¹* 8 ἡδονὰς] ὀδύνας *coni. Wyttenbach*: 9 ἀλγηδόνας <καὶ εὐπαθείας> *coni. Ziegler* 13 δὲ *add. Bernardakis*

63A [Plutarch], *Opinions of the Philosophers* 4.23 904C (BT vol.5.2.1 p.131.12–15 Mau 1971)

Strato [says that] the emotions of the soul too, and the sensations, have their being in the ruling [part] and not in the places that are affected. For it is in [the soul] that they are undergone, as with fearful and painful things.¹

¹ The text adds “and as with courageous and cowardly ones,” deleted by Diels.

63B Plutarch(?), *On Desire and Grief* 4 (BT t.6.3 p.53.10–54.9 Ziegler and Pohlenz 1966)

Those who claim to be dogmatic philosophers with a grasp [of the truth] ought to agree with and say the same as one another about the evident emotions, if about nothing else. But their error is great. For some attribute all these things together to the soul and place them there, like Strato the naturalist who says that not only desires but pains, and not [only] fears and jealousies and *Schadenfreude*, but also [physical] pains and pleasures and sufferings and in general every sensation has its being in the soul, and all such things belong to the soul; it is not in our foot that we feel the pain when we stub our toe, nor in the head when we break it, nor in our finger when we cut it off. For the other [parts], apart from the ruling part, are without sensation; it is when the blow is transmitted keenly to this that we call the sensation pain. Just as we think that the voice which sounds in our ears is outside, adding to the sensation the distance from the source to the ruling [part], in a similar way we think that that the pain from the

p.54 τραύματος πόνον οὐχ ὅπου τὴν αἴσθησιν εἴληφεν, ἀλλ' ὅθεν ἔσχε τὴν ἀρχὴν εἶναι δοκοῦμεν, ἐλκομένης ἐπ' ἐκεῖνο 20 τῆς ψυχῆς ἀφ' οὗ πέπονθε. διὸ καὶ προσκόψαντες αὐτίκα τὰς ὀφρῦς συναγομεν, τῷ πληγέντι μορίῳ τοῦ ἡγεμονικοῦ τὴν αἴσθησιν ὀξέως ἀποδιδόντος, καὶ παρεγκάπτομεν ἔσθ' ὅτε τὸ πνεῦμα, κἂν τὰ μέρη δεσμοῖς διαλαμβάνηται, *** χερσὶ σφόδρα πιέζομεν, <ἐν>ιστάμενοι πρὸς τὴν διάδοσιν 25 τοῦ πάθους καὶ τὴν πληγὴν ἐν τοῖς ἀναισθήτοις θλίβοντες, ἵνα μὴ <τῷ> συνάσαι πρὸς τὸ φρονοῦν ἀλγηδὼν γένηται. ταῦτα μὲν οὖν ὁ Στράτων ἐπὶ πολλοῖς ὡς εἰκὸς τοιούτοις.

19–20 ἄλλοθεν *i* 21 ὅφ' οὗ *Bernardakis* 22 συνάγομεν, τῷ *Duebner*:
συνήγαγον ἐν τῷ Ω: συνηγάγομεν τῷ *Bernardakis* 23 παρεγκάπτομεν *Mad-*
vig: παρεγκάπτομεν Ω 24 κἂν] ἄν *coni. Wyttenbach* τὰ] τινὰ *Hartman*
24–25 <ταῖς> χερσὶ *Duebner*, *quem secutus est Wehrli*: <ἀναισθητα γίνεται τὰ
ἄκρα, δεσμῶν δὲ μὴ παρόντων ταῖς> *fere desideravit Pohlenz* 25 ἐν *add. Ber-*
nardakis 26 θλίβοντες *i*: πλήττοντες *hk*: ἀποθλίβοντες *Pohlenz* 27 τῷ *add.*
Pohlenz συνάσει *Bernardakis* 28 τοιούτοις] τοῦτοις *k*

64 Stobaeus, *Eclogae* 1.52 tit. et 3 (p.483.5 et 16–17 Wachsmuth 1884)

Περὶ ὁράσεως καὶ κατοπτρικῶν ἐμφάσεων.
... Στράτων χρώματά φησιν ἀπὸ τῶν σωμάτων φέρεσθαι
συγχρῶζοντ' αὐτοῖς τὸν μεταξὺ ἀέρα.

1–3 *Aetius* 4.13.7 *Diels* (*DG* p.403b1 et 26–28)

1 *titulum omittunt FPL, suppl. Heeren ex Photio Bibliotheca* 167 112b31–32
2–3 *om. FP, habet solus L* 2 Στράτων *Meineke*: Ἀτράτων *L (A rubr.)* 3
συγχρῶζοντ' *Meineke*: συγχροίζοντ' *L* συγχρῶζονθ' αὐτοῖς *Meineke*

65 Alexander, In *Aristotelis De sensu* 6 446b2–27 (CAG t.3.1 126.12–24 Wendland 1901)

σημεῖον δὲ παρατίθεται τοῦ μὴ ἅμα γίνεσθαι τε τὴν πληγὴν
καὶ ἀκούεσθαι τὸ τοὺς τῶν λεγόντων πορρωτέρω
ἀφεστῶτας ἀκούειν μὲν ψόφου τοῦ ἐκ τῆς φωνῆς, μὴ
ἀκούειν δὲ τὸ ῥηθέν, διὰ τὸ ἐν τῷ μεταξὺ [τουτέστι]
μετασηματίζεσθαι [τὰ γράμματα] τὰ ἐκ τῶν γραμμάτων 5

p.54 wound is not where the sensation has been received, but where it had its origin, the soul being drawn to that [part] from where it was affected. And for this reason when we bump into something we immediately draw our eyebrows together, when the ruling [part] keenly assigns sensation to the part that has been struck, and we sometimes swallow our breath, and if our limbs are held by bonds ***¹ we press hard with [our] hands, obstructing the transmission of the affection and compressing the blow in the parts that are without sensation, so that it should not, by reaching the [part] that has intelligence, become pain. Well, this is what Strato [says], reasonably, in many such cases.

¹ The text seems corrupt. Duebner, followed by Wehrli, simply adds *tais*, which makes the sense in the English run on without a break: “if our limbs are held by bonds we press hard with our hands.” But this seems contradictory; would the bonds allow it? Pohlenz suggested that more has dropped out of the text, and that one would expect “if our limbs are held apart by bonds <the extremities become numb, but if we are not in bonds> we press. . . .” For numbness caused by pressure interrupting *pneuma* see Theophrastus, 346 FHS&G (though Theophrastus’ account is more complicated because of the desire to involve chilling, too).

64 Stobaeus, *Selections* 1.52 title and 3 (p.483.5 and 16–17 Wachsmuth 1884)

On sight and images in mirrors.
. . . Strato says that colours travel from bodies and give their colour to the intervening air.¹

¹ I.e. the air between the thing seen and the person seeing it.

65 Alexander, *On Aristotle’s On Sensation* 6 446b2–27 (CAG vol.3.1 126.12–24 Wendland 1901)

[Aristotle] provides, as an indication that the impact¹ is not heard at the same time that it happens, the fact that those who are standing a long way away from those who are speaking hear the sound from the voice, but do not hear what is said, because in the intervening [space] the shapes that are produced in the air from [the

καὶ τῶν ἐξ αὐτῶν συγκειμένων λόγων γινόμενα ἐν τῷ ἀέρι
 σχήματα ὑπὸ τῆς πληγῆς καὶ μὴ τοιούτους ἀφικνεῖσθαι
 τοὺς ψόφους πρὸς τὴν ἀκοήν, ὁποίους αὐτοὺς οἱ λέγοντες
 ἐσχημάτισαν. εἴτε δὴ τῷ τὸ σχῆμα ὑπαλλάττεσθαι αὐτῶν
 ἐν τῇ φορᾷ εἴτε τῷ ἐκλύεσθαι τὸν τόνον τῆς πληγῆς, ὥς ¹⁰
 Στράτων λέγει (οὐ γάρ φησιν ἐν τῷ σχηματίζεσθαι πως τὸν
 ἀέρα τοὺς διαφόρους ψόφους γίνεσθαι, ἀλλὰ τῇ τῆς πληγῆς
 ἀνισότητι), ἀλλ' οὖν, ὁποτέρως ἂν γίνηται τὸ μὴ οὕτως
 ἀκούεσθαι, ὥς γίνεται ἢ φορά, [καὶ] τῷ ἐν τῷ μεταξὺ
 διαστήματι, δι' οὗ φέρεται, [τῷ] διαδέχεσθαι τὴν πληγὴν ¹⁵
 ἄλλον ἐξ ἄλλου ἀέρα τοῦτο γίνεται.

2 ἀκούειν *T* τῶν *om.* *a* πορρώτερον *P ut vid.* 4 τουτέστι *del. Us: exhib.*
APa: om. *V:* δεῖ *T:* διαστήματι *Diels* 5 σχηματίζεσθαι *A* τὰ γράμματα
del. Us. 6 συγκειμένων] γινομένων *V* 9 εἴτε δὴ *MTAP:* εἰ δὲ δὴ *V:* εἴτε δὲ
a τῷ τὸ (*T*)*VP:* τῷ *M:* τὸ *Aa* 10 φορᾷ] φρουρᾷ *a (corr. M)* 13 οὖν *om.*
T ὁπότερον *a* γένηται *a* τὸ *Usener:* τῷ *Pa:* τοῦ *MVA* 13–14 quod
 non sic audiatur *T* 14 φορά] ἀναφορά *Pa* καὶ *TVA:* ἀλλὰ *Pa:* αἰτία ἐστὶ
M: del. Wendland qui tamen ὁπότερον . . . τοῦ μὴ . . . φορά, <αἴτιον> *coniecit*
 τῷ (*pr.*) *om. A* 15 τῷ *del. Thurot:* τὸ *V* τῆς πληγῆς *a: om. T* 16 ἀέρος
T γίνεσθαι *Pa*

De somno et insomniis

66 [Plutarchus], Placita 5.24 909EF (BT t.5.2.1 p.148.21–149.2 Mau
 (dub.) 1971)

Στράτων οἱ Στωικοὶ τὸν μὲν ὕπνον γίνεσθαι ἀνέσει τοῦ
 F αἰσθητικοῦ πνεύματος οὐ κατ' ἀναχαλασμόν, καθάπερ ἐπὶ
 τῆς γη<ράνσεω>ς, φερομένου δ' ὥς ἐπὶ τὸ ἡγεμονικόν
 p.149 μεσόφρυνον· ὅταν δὲ παντελὴς γένηται ἡ ἄνεσις τοῦ
 αἰσθητικοῦ πνεύματος, τότε γεγενῆσθαι θάνατον.

1–5 *Aëtius* 5.24.4 *Diels* (DG p.436a9–16); SVF 2.767 1–2 et 4–5 [*Galenus*],
Hist. Phil. 128 (DG p.646.15–17 *Diels*)

1 Στράτων *Corsinus:* Πλάτων *codd. et [Galenus]* (et ad *Timaeum* 45de refert
Mau; sed cf. quae ad translationem adnotavi) 2–3 ἐπὶ τῆς γη<ράνσεω>ς
coni. Mau: ἐπὶ τῆς γῆς *codd.: ἐπὶ τῆς μέθης coni. Diels:* Ἐπιγένης *coni. Usener:*
 ἐπιπολῆς *Corsinus* 3 φερόμενος *ΜΠ* 3–4 ἢ μεσόφρυνον *coni. Corsinus* 4
 ἢ ἄνεσις] ἀναισθησία [*Galenus*] 5 πνεύματος] αἵματος [*Galenus*] *cod. B*

sounds of] the letters and the words composed of them by the impact are changed, and the sounds do not arrive at the hearing with the same shapes that the speakers gave to them. Whether it is by their shapes being changed as they travel, or by the tension of the impact being slackened, as Strato says (for he says that different sounds are not produced by the air being shaped in certain ways, but by the inequality of the impact), at any rate, whichever way it comes about that [the sound] is not heard in the way that it travels, this happens through one [part of the] air receiving the impact in turn from another in the intervening interval through which [the sound] travels.

¹ That is, the impact on the air which produces a sound.

Sleep and dreams

66 Pseudo-Plutarch, *Opinions of the Philosophers* 5.24 909EF (BT (dub.) vol. 5.2.1 p.148.21–149.2 Mau 1971)

Strato¹ [and] the Stoics [say] that sleep comes about through a relaxation of the sensory *pneuma*, not through a slackening as in growing old,² but when it is carried towards the ruling [principle in] the space between the eyebrows. When the relaxation of the sensory *pneuma* is total, death occurs.

¹ The MSS, and pseudo-Galen, have “Plato.” “Strato” is an emendation by Corsinus, accepted by Diels because of the reference to the space between the eyebrows (cf. **57** and **58**). Mau compares the explanation of sleep in terms of obstruction of the visual ray at Plato, *Timaeus* 45de; there is no reference to *pneuma* there, but [Plutarch] may refer to this in the context rather of the Stoic theory.

² Mau’s conjectural emendation for the meaningless “on the ground” of the MSS. Diels conjectured “as in drunkenness,” Usener “as [supposed by] Epigenes,” and Corsinus “as on the surface.”

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67 Tertullianus, *De anima* 43.1–2 (p.58.21–28 Waszink 1947)

De somno prius disputemus, post, mortem qualiter anima
decurrat. Non utique extranaturale est somnus, ut
quibusdam philosophis placet, cum ex his eum deputant
2 causis quae praeter naturam haberi uidentur. Stoici
somnum resolutionem sensualis uigoris affirmant, Epicurei
diminutionem spiritus animalis, Anaxagoras cum
Xenophane defetiscentiam, Empedocles et Parmenides
refrigerationem, Strato segregationem consati spiritus,
Democritus indigentiam spiritus, Aristoteles marcorem
circumcordialis calor. 10

8 confert Polito 2004, 162–63 Philoponum, In Aristotelis *Physica* 8.6 259b6 (CAG 17 890.12–19), *Stratone non nominato*

1 disputem A 5 sensualis uigoris] animalis vaporis Siebeck 6 diminutionem
B Gelenius cum iterat A 8 Strato segregationem om. A con sati ita A 9
indigentiam spiritus om. A

68 [Plutarchus], *Placita* 5.2 904EF (BT t.5.2.1 p.134.4 et 7–9 Mau 1971)

Πῶς ὄνειροι γίνονται.

. . . Στράτων ἀλόγῳ φύσει τῆς διανοίας ἐν τοῖς ὕπνοις
αἰσθητικωτέρας μὲν πως γινομένης, παρ' αὐτὸ δὲ τοῦτο τῷ
γνωστικῷ κινουμένης.

1–4 *Aëtius* 5.2.2 *Diels* (DG 416a6 et 10–13); [Galenus], *Hist. phil.* 106 (DG p.640.1 et 3–4 *Diels*)

2 ἀλόγῳ φύσει] ἄλλη τις φύσις [Galenus] 3 πως] τῆς ψυχῆς [Galenus] αὐτὸ
δὲ τοῦτο *Diels*: αὐτῷ δὲ τούτῳ Ω: δι' αὐτὸ δὲ τοῦτο [Galenus]

69 Tertullianus, *De anima* 46.3,7,10 (p.63.8–9, 29, 64.15–18 Waszink 1947)

3 Aristoteles maiorem partem mendacio reputans agnoscit et
7 uerum. . . Nouerunt et Romani ueritatis huiusmodi somnia.
10 p.64 . . . Quanti autem commentatores et affirmatores in hanc
rem? Artemon Antiphon Strato Philochorus Epicharmus
Serapion Cratippus Dionysius Rhodius Hermippus, tota

67 Tertullian, *On the Soul* 43.1–2 (p.58.21–28 Waszink 1947)

Let us first discuss sleep, and then how the soul passes through death. Sleep is certainly not unnatural, as some philosophers suppose, when they consider it as [resulting] from causes which seem
2 to be regarded as contrary to nature. The Stoics assert that sleep is a slackening of the strength of sensation, the Epicureans [that it is] a diminution of animal *pneuma*, Anaxagoras along with Xenophanes that it is weariness, Empedocles and Parmenides that it is a chilling, Strato that it is a separation of the connate *pneuma*,¹ Democritus that it is a lack of *pneuma*, Aristotle that it is a weakening of the heat around the heart.

¹ Polito 2004, 162–63 compares Philoponus, *On Aristotle's Physics* 8.6 259b6 (CAG 17 890.12–19), which he argues reports Strato's view though Strato is not there named; sleep is there attributed to vapours from digestion preventing perceptive *pneuma* being distributed from the brain through the “perceptive channels.” Compare **61** above.

68 Pseudo-Plutarch, *Opinions of the Philosophers* 5.2 904EF (*BT* vol.5.2.1 p.134.4 and 7–9 Mau 1971)

How dreams come about.

. . . Strato [says that it is by] an irrational nature in the intelligence, [since] in sleep [the intelligence] becomes¹ in a way more perceptive, and for this very reason is affected by the cognitive [power].

¹ Or “. . . by an irrational nature, since in sleep the intelligence becomes. . .” Pseudo-Galen has “[it is] another nature of the intelligence, since in sleep the soul becomes. . .”

69 Tertullian, *On the Soul* 46.3,7,10 (p.63.8–9, 29, 64.15–18 Waszink 1947)

3 Aristotle ascribes the greater part [of dreams] to falsehood, but also
7 recognises the true [dream]. . . The Romans too are acquainted
10 p.64 with dreams that are true in this way. . . And how many are there who have discussed this matter and assured us of it? Artemon, Antiphon, Strato, Philochorus, Epicharmus, Serapion, Cratippus,

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saeculi litteratura.

1 maiorem *coni. Reiffenscheid*: maiore *AB Gelenius*: maiori *Oehler* partem
coni. Reiffenscheid: sententiam *B Gel.*: om. A mendaciorum *coni. Reiffens-*
heid 2 huiusmodis omnia *A corr.* 3 et affirmatores om. A 5 et Dionysius
B Gel.

De generatione animalium

70 [Plutarchus], Placita 5.4 905B (BT t.5.2.1 p.135.6–13 Mau 1971)

δ. Εἰ σῶμα τὸ σπέρμα.

Λεύκιππος καὶ Ζήνων σῶμα· ψυχῆς γὰρ εἶναι ἀπό-
 σπασμα.

Πυθαγόρας Πλάτων Ἀριστοτέλης ἀσώματον μὲν εἶναι
 τὴν δύναμιν τοῦ σπέρματος ὥσπερ νοῦν τὸν κινοῦντα, 5
 σωματικὴν δὲ τὴν ὕλην τὴν προχεομένην.

Στράτων καὶ Δημόκριτος καὶ τὴν δύναμιν σῶμα· πνευ-
 ματικὴ γάρ.

1–8 *Aetius* 5.4.1–3 *Diels* (DG 417a18–418b2); [*Galenus*], *Hist. phil.* 108 (DG
 p.640.16–20 *Diels*) 2–3 *Leucippus* 67A75 DK; *Zeno Citiensis*, SVF 1.128 4
Plato, *Timaeus* 73c; *Aristoteles*, GA 2.3 737a7–9 7–8 *Democritus*, 68A140
 DK

2 εἶναι <καὶ σώματος> *Reiske*: *reiecit Diels* 5 ὥσπερ—κινοῦντα om. [*Galenus*]
 7 καὶ τὴν δύναμιν] καὶ κατὰ δύναμιν *Reiske ex [Galenos]* 7–8 καὶ τὴν δύναμιν
 σῶμα· πνευματικὴ γάρ] κατὰ δύναμιν εἶναι σωματικὴν *tantum [Galenus]*, *cuius*
de lectione vide Mansfeld et Runia 1997, 148 (v) 8 πνευματικὸν δὲ *Reiske ex*
[Galenos]: πνευματικὴν γάρ *Wyttenbach*

71 Galenus, De semine 2.5.12–15 (CMG 5.3.1 p.182.6–18 De Lacy 1992)

διαλλάττει δὲ καὶ τῷ τὰ μὲν εἶναι ψιλότερα, τὰ δὲ
 λασιώτερα, καὶ τὰ μὲν μαλακότριχα καὶ πλατυῖσχα, τὰ δὲ
 εὐρύστερνα, καὶ ἄλλαις πολλαῖς διαφοραῖς, ὥστ' οὐκ ἂν
 ἄπο τρόπου δόξειεν ὁ φυσικὸς Στράτων ὑπειληφέναι τὸ
 μὲν ἄρρεν γίνεσθαι ζῶον ἐπικρατεία γονῆς ἄρρενος, τὸ δὲ 5
 13 θῆλη θηλείας. οὗτος μὲν γε καὶ φλεψὶ καὶ ἀρτηρίαις οἶται
 διαφέρειν αὐτὰ, καθάπερ γε τοῖς γεννητικοῖς μορίοις,
 14 ἀπείρως ἔχων ἀνατομῆς ἀκριβοῦς· οὐ γὰρ ὁ ἀριθμὸς

Dionysius of Rhodes, Hermippus; all the literature of [this] age.

Reproduction

- 70** Pseudo-Plutarch, *Opinions of the Philosophers* 5.4 905B (BT vol.5.2.1 p.135.6–13 Mau 1971)

Whether seed is a body.

Leucippus and Zeno [the Stoic] [say that it is] a body; for it is a [portion] drawn off from soul.

Pythagoras, Plato [and] Aristotle [say] that the power of the seed is incorporeal, like the intellect that causes movement, but the matter that is emitted is corporeal.

Strato and Democritus [say that] the power too is a body; for it is [of the nature] of *pneuma*.

- 71** Galen, *On Seed* 2.5.12–15 (CMG vol. 5.3.1 p.182.6–18 De Lacy 1992)

[Female and male animals] differ also in that the former have less hair and the latter more, and the former have soft hair and broad hips, the latter broad chests, and also by many other differences, so that it would not seem inappropriate that the naturalist Strato supposed that the male animal is produced when male seed pre-

- ¹³ vails, the female when female [seed prevails]. He indeed thinks that they also differ in their veins and arteries, as in their generative parts, because he had no experience of accurate dissection;

μόνον, ἀλλὰ καὶ ἡ διάπλασις ἡ αὐτὴ καὶ ἡ θέσις ἀπάσαις
ταῖς ἀρτηρίαις ἐστὶ καὶ ταῖς φλεψὶ καθ' ὅλον τὸ σῶμα τῶν
15 ἀρρένων τε καὶ θηλέων ζώων. ἀλλὰ ταύτη μὲν ἡμαρτε
πάμπολυ· τὸ δ' οἰηθῆναι τὸ μὲν ἄρρεν ζῶον, ὅταν
ἐπικρατήσῃ τὸ τοῦ ἄρρενος σπέρμα, τὸ δὲ θῆλυ κατὰ τὴν
τῆς θηλείας ἐπικράτησιν γίνεσθαι, πιθανὸν <μὲν> ἱκανῶς
ἐστὶ, μάχεται δὲ αὐτῷ τὸ καὶ τὰ θήλεα πολλάκις ὁμοιότατα
15 γίνεσθαι τῷ πατρὶ καὶ τῶν ἀρρένων οὐκ ὀλίγα τῇ μητρί.

1 τῷ] τὸ P: in eo quod Nicolai versio Latina ψιλότερα] *confirmat versio arabica*: ψιλώτερα Ald.: ψυχρότερα P: altiora Nicolai *codl.^{bcpv}*: activiora Nicolai *cod.^d* 2 πλατυῖσχια *confirmat arab.*: πλατώνυχια P: om. Nic. 4 Στράτων *Fabricius, confirmat arab.*: στρατὸν P: Στρατόνικος Ald., Nic^{bcdp}: *verbum deletum, deinde communiter Nic^v* 6 οὔτος *De Lacy sec. arab.*: οὕτως P: οὕτω Ald. φλεβὶ P, *sed pluralem confirmant arab. Nic.* 9 ἡ αὐτῇ] αὐτὴ Ald.: eadem Nic. 10 ἐστὶ om. P 11 θηλέων Kühn: θηλειῶν P Ald. 12 διοιηθῆναι P: ορ(ρ)inari Nic. 13 τὸ (alt.) ex τί *corr. P* τὴν] τὸν P: id quod Nic. 14 ἐπικράτησιν] ἐπικρατήσῃ P πιθανὸν *Cornarius*: πιθανῶς P Ald.: *suasibile Nic.* μὲν *add. De Lacy sec. Nicolaum* ἱκανός P: *valde Nic.* 15 τὸ] τε *scr. et del. P*

72 Censorinus, *De die natali* 7.2–7 (BT p.11.11–12.17 Sallmann 1983)

iam primum quoto post conceptionem mense infantes
edi soleant, frequenter agitatum inter veteres nondum
convenit. Hippon Metapontinus a septimo ad decimum
mensem nasci posse aestimavit: nam septimo partum iam
esse maturum, eo quod in omnibus numerus septenarius
5 plurimum possit, siquidem septem formemur mensibus,
additisque alteris recti consistere incipiamus, et post sep-
timum mensem dentes nobis innascantur, idemque post
septimum cadant annum, quarto decimo autem pubes-
3 cere soleamus. sed hanc a septem mensibus incipientem
p.12 maturitatem usque ad decem perductam, ideo quod in
aliis omnibus haec eadem natura est, ut septem mensibus
annive tres aut menses aut anni ad consummationem

1–4, 18–32 *Diocles Carystius, fr.48d van der Eijk*

1 quota C: *corr. V* conceptione C: *corr. V* 6 formentur QGL: formantur I
alteris <septem> *Giusta* 8 iidemque *Jahn* 10 hunc CP: *corr. V* 11 perduc
H: perductam <putat> *Giusta* 13 consummationem] confirmationem QIG

- 14 for not only the number, but also the formation and position of all
the arteries and veins is the same in the whole body of male and
15 female animals. Well, in this respect he went completely astray;
but to think that the male animal is produced when the seed of
the male prevails, the female when that of the female, is quite
plausible, but against it there is the fact that females are often very
like their fathers, and not a few males like their mothers.

72 Censorinus, *On the Day of Birth* 7.2–7 (BT p.11.11–12.17 Sallmann 1983)

First, in which month after conception babies are usually born, although frequently discussed by the ancients, has not yet been agreed. Hippo of Metapontum thinks that birth is possible from the seventh to the tenth month; for a [baby] born in the seventh month is already mature, because in everything multiples of seven have the greatest power, if we are formed in seven months, begin to stand upright after another, and grow teeth after the seventh month, and these same [teeth] fall out after the seventh year, and
3 puberty is usually at the age of fourteen. But this maturity, which
p.12 begins after seven months [of pregnancy], extends to ten months, because in everything else this same thing happens by nature, that three months or years are added to seven months or years for

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- 4 accedant: nam dentes septem mensum infanti nasci et
maxime decimo perfici mense, septimo anno primos 15
eorum excidere, decimo ultimos, post quartum decimum
annum nonnullos, sed omnes intra septimum decimum
annum pubescere. huic opinioni in parte aliqua repug-
nant alii, in parte consentiunt. nam septimo mense parere
mulierem posse plurimi adfirmant, ut Theano Pythago- 20
rica, Aristoteles peripateticus, Diocles, Euenor, Straton,
Empedocles, Epigenes multique praeterea, quorum
omnium consensus Euryphonem Cnidium non deterret id
6 ipsum intrepide pernegantem. contra eum ferme omnes
Epicharmum secuti octavo mense nasci negaverunt; Dio- 25
cles tamen Carystius et Aristoteles Stagiritis aliter sense-
runt. nono autem et decimo mense cum Chaldaei plurimi
et idem supra mihi nominatus Aristoteles edi posse partum
putaverint, neque Epigenes Byzantius nono fieri posse con-
7 tendit, nec Hippocrates Cous decimo; ceterum undecimum 30
mensem Aristoteles solus recipit, ceteri universi improbar-
unt.

19–22 *Empedocles*, fr.31A83 DK 21 *Aristoteles*] HA 7.3 584b3 24–25 [*Epic-
harmus*], fr.23B59 DK, PCG fr.*291 Kassel et Austin 26 *Aristoteles*] cf. HA 7.4
584b7–14 31 *Aristoteles*] HA 7.4 584b1

14 mensum *gen. pl. C* ut *semper*: mensuum *C²P*: mensium *GL* 15–16 primus
... ultimus *CP*: *corr. V* 19 alii <alia> *Jahn*: alii <aliqua> *Giusta* 20 Theon
BBW: Theanus *H* Pythagoricus *codd.*: *corr. Jahn* 21 *Aristotelis CP*: *corr.*
V Euenor] Euenus *Q edd.*: eucner *V*: euerne *BBW*: euener *SOIGL*: Eudemus
coni. Ald.: Eudaemon *Manutius* Straton *BBW*: Starton *C.al.* 23 euri-
phonem *C.al.*: euriformum *H*: Euthyphronem *Ald.*: Euryphontem *Jahn* 24
omne *CP*: *corr. C³* 27 cum] quo *L* 28 mihi *om. V* 29 ephigenes *C* nono]
octavo *L* 30–31 undecimo mense *QIBBW* 31 *Aristotelis CPV*

73A [Iamblichus], Theol. Arithm. 46–47 (BT p.62.8–63.7 De Falco 1922)

Στράτων δὲ ὁ Περιπατητικὸς καὶ Διοκλῆς ὁ Καρύστιος καὶ
πολλοὶ ἕτεροι τῶν ἱατρῶν ἐν μὲν τῇ δευτέρᾳ ἑβδομάδι
ράνιδας αἵματος ἐπιφαίνεσθαι τῷ λεχθέντι ὑμένι φασὶν ἐκ
τῆς ἐξωτέρας ἐπιπολῆς, ἐν δὲ τῇ τρίτῃ διϊκνεῖσθαι αὐτὰς
μέχρι τῶν ὑγρῶν, ἐν δὲ τῇ δ' ἠρομβοῦσθαι τὸ ὑγρὸν φασί 5
καὶ μέσον ὥς σαρκὸς τι καὶ αἵματος σύστρεμμα ἴσχειν,

- 4 completion; for a baby of seven months gets its teeth, but they are completed in the tenth month at most; the first of them fall out in the seventh year, the last in the tenth; and quite a few people reach puberty after their fourteenth year, but all before their seventeenth year.
- 5 Others partly reject this opinion, and partly agree with it. For very many assert that a woman can give birth in the seventh month, as do Theano the Pythagorean, Aristotle the Peripatetic, Diocles, Euenor, Strato, Empedocles and many others besides, though the fact that they all agree does not deter Euryphon of
- 6 Cnidus who fearlessly denies this same thing. Against him almost everyone, following Epicharmus,¹ denied that birth is possible in the eighth month; but Diocles of Carystus and Aristotle of Stagira took a different view. Although very many of the Chaldaeans and the same Aristotle I mentioned above think that birth is possible in the ninth and tenth month, Epigenes of Byzantium does not argue that it is possible in the ninth month, nor Hippocrates of
- 7 Cos in the tenth; Aristotle alone accepts the eleventh month, all the others reject it.

¹ Epicharmus fr.23B59 DK, fr.*291 in Kassel and Austin, *Poetae Comici Graeci*; not a genuine report of Epicharmus (I am grateful to Tiziano Dorandi for pointing this out).

73A Pseudo-Iamblichus, *Theology of Arithmetic* 46–47 (BT p.62.8–63.7 De Falco 1922)

Strato the Peripatetic and Diocles of Carystus and many other doctors¹ say that in the second week spots of blood appear on the afore-mentioned membrane, [starting] from the outer surface, in the third they reach through to the moisture, and in the fourth the moisture clots and has a centre like a ball of flesh and

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- 47 δηλονότι τελεσιουργίας τυχὸν διὰ τὴν τοῦ κη' τελείαν φύσιν ἢ διὰ τὴν ἐν αὐτῷ τῶν δύο περιπτῶν κύβων περαινούσης οὐσίας ὑπαρχόντων σύνθεσιν, ἐν δὲ τῇ ε' κατὰ τὴν λ' μάλιστα καὶ πέμπτην ἡμέραν διαπλάττεσθαι ἐν 10 μέσῳ αὐτοῦ μελίττης μὲν μεγέθει ἔοικὸς τὸ βρέφος, διατετρανωμένον δὲ ὅμως, ὥστε κεφαλὴν καὶ αὐχένα καὶ θώρακα καὶ κῶλα ὀλοσχερέστερον φαντάζεσθαι ἐν αὐτῷ· καὶ τοῦτό φασι ζ' μηνὶ γόνιμον εἶναι, εἰ δ' ἐννέα μέλλει p.63 γενήσεσθαι, τῇ ς' πάσχει τοῦτο ἑβδομάδι, ἂν θῆλυ ᾦ, ἂν 15 δὲ ἄρσεν, τῇ ζ'. τῆς δὲ γονιμότητος αἰτίαν μάλιστα τὴν ἑβδομάδα ὑπάρχειν, δηλοῖ τὸ καὶ τὰ ἑπταμηνιαῖα δι' αὐτὴν ζῶσιμα οὐκ ἔλαττον τῶν ἐννεαμηνιαίων γίνεσθαι. διαφθείρεσθαι δὲ ὑπὸ τῆς φυσικῆς ἀνάγκης τὰ ἀμφοῖν 20 μέσα τεταγμένα ὀκταμηνιαῖα, ὃ διὰ τοιούτου τινὸς ἐπιλογισμοῦ συνεβίβαζον οἱ Πυθαγορικοί, δι' ἀριθμητικῶν λόγων καὶ διαγραμμάτων τὴν ἔφοδον ποιοῦμενοι . . .

1–16 Diocles, *fr.45a van der Eijk*

4 ἐπιπολῆς γ: ἐπιπλοκῆς *Pp* 4–5 αὐτὰς—θρομβοῦσθαι γ: *om. Pp* 7 τοῦ *om. B* 8 ἢ *Ast*: ἦν *MLBP*: ἦ *NF*: ἦν *p* κύβων *om. B* 9 τῇ *Roscher*: τῷ *Xp* 10 λ'] τριακοστὴν *NF* 11 αὐτοῦ γ: αὐτῷ *Pp* 15 γεννήσεσθαι *N* 17 δι'] δ' *P*

73B Macrobius, In Somnium Scipionis 1.6. 65–66 (BT t.2 p.30.23–31.5 Willis 1963)

Straton Peripateticus et Diocles Carystius per septenos dies concepti corporis fabricam hac observatione dispensant, ut hebdomade secunda credant guttas sanguinis in superficie folliculi de quo diximus apparere, tertia demergi eas introrsum ad ipsum conceptionis umorem, quarta umorem 5 ipsum coagulari, ut quiddam velut inter carnem et

47 blood. Clearly it has reached completion because of the complete nature of 28 or because of the combination in [this] of two odd cubes whose being is limited.² In the fifth week, on the 35th day approximately, there is fashioned in the middle of [the moisture] the embryo, which is similar in size to a bee, but is nevertheless clearly articulated, so that head and neck and chest and limbs appear in it in rather general outline. And they say that this can be born viably in six months, but if it is going to be born in nine, p.63 this happens to it in the sixth week if it is female, in the seventh if it is male.³ [They say]⁴ that the number seven is the chief cause of viability at birth is clear from the fact that on account of it seven-month children, too, are viable no less than nine-month ones. But the eight-month ones, placed intermediately between the two, are destroyed by natural necessity, which the Pythagoreans infer through some such calculation, approaching [the question] through arithmetical ratios and diagrams. . . .

¹ As van der Eijk 2000–2001, vol.2, 99 rightly points out, the reference to “many other doctors” suggests the source may be a doxographical report. It seems unlikely that Strato took over the whole detailed account in **73B** from Diocles and accepted it himself in every detail. Van der Eijk 2000–2001, 102 rejects Wellmann’s suggestion that the report of Diocles in this text was actually transmitted by Strato.

² $28 = 3^3 + 1^3$. In Pythagorean doctrine odd is limited, even unlimited. Comparison with **73B** shows that this sentence is pseudo-Iamblichus’ own contribution, not taken from his source that reported the view of Strato and Diocles.

³ Van der Eijk 2000–2001, vol.2 99–100 argues that the indicative “this happens” shows that from “but if it is going to be born in nine” is now Pseudo-Iamblichus’ own statement, not part of the report of Strato and Diocles. See the next note.

⁴ Pseudo-Iamblichus’ wording now implies again that it is the view of Strato and Diocles that is being reported. But we have clearly returned to the numero-logical interpretation of lines 7–10.

73B Macrobius, *On the Dream of Scipio* 1.6.65 (BT vol.2 p.30.23–31.1 Willis 1963)¹

Strato the Peripatetic and Diocles of Carystus set out the fashioning of the foetus by periods of seven days with the following observation, that they believe that in the second week drops of blood appear on the surface of the sac of which we have spoken; in the third these sink inwards to the moisture of the conception; in the fourth the moisture itself coagulates, so something

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sanguinem liquida adhuc soliditate conveniat, quinta vero
interdum fingi in ipsa substantia umoris humanam figuram,
magnitudine quidem apis, sed ut in illa brevitate membra
p.31 omnia et designata totius corporis lineamenta consistent. 10
66 ideo autem adiecimus interdum quia constat quotiens
quinta hebdomade fingitur designatio ista membrorum,
mense septimo maturari partum. cum autem nono mense
absolutio futura est, si quidem femina fabricatur, sexta
hebdomade membra iam dividi; si masculus, septima. 15

1–10 *Diocles, fr.45b van der Eijk*

1 sraton *B* 3 gutta *E^{ac}*: guttam *B^{ac}* 4 dimergi *DB* 9 magnitudinem *B* 10 et
om. C 11 autem *om. D* adiecimus *om. C* 12 designatio ista fingitur *C*

74 [Plutarchus], Placita 5.8 905F–906A (BT t.5.2.1 p.137.13 et 19–20 Mau 1971)

Πῶς τέρατα γίνεται.
. . . Στράτων παρὰ πρόσθεσιν ἢ ἀφαίρεσιν ἢ μετάθεσιν ἢ
πνευμάτωνσιν.

1–3 *Aetius* 5.8.2 *Diels* (*DG* p.420a19 et 421a1–2); [*Galenus*], *Hist. phil.* 112 (*DG* p.641.16 et 19 *Diels*)

2 πρόσθεσιν] πρόθεσιν *M* ἢ ἀφαίρεσιν ἢ μετάθεσιν *om. [Galenus]* 3
ἐμπνευμάτωνσιν [*Galenus*]

Physiologica

75 Galenus, De tremore 6 (t.7 p.615.16–616.4 Kühn 1824)

οὐδὲ γὰρ Ἀθηναῖον ἐπαινῶ περὶ μὲν Ἀσκληπιάδου καὶ
p.616 Ἡρακλείδου τοῦ Ποντικοῦ καὶ Στράτωνος τοῦ φυσικοῦ
λέγοντά τι, τῶν δ' ἄλλων οὐδενὸς μνημονεύοντα, καὶ τοί γε
οὐ τὰς τούτων δόξας μόνον περὶ ῥίγους, ἀλλ' ἑτέρας πολὺ
πλείους οὐδὲν ἥττον ἐνδόξους τε καὶ πιθανὰς εἶχεν εἰπεῖν. 5

Cf. etiam **Appendix 2–13**

between flesh and blood is constituted with a solidity that is still fluid; in the fifth [week] a human shape is sometimes fashioned in the actual substance of the moisture, the size of a bee, but in
p.31 such a way that in that small size there are present all the limbs,
66 and the outline of the whole body marked out. The reason why we have added “sometimes” is that it is agreed that whenever this marking-out of the limbs is fashioned in the fifth week, the birth will be ready in the seventh month. But if the delivery is going to be in the ninth month, [then], if a female is being formed, the limbs are already distinguished in the sixth week, but if a male, in the seventh.²

¹ Van der Eijk 2000–2001, vol.2 102, suggests that Macrobius’ source might be either **73A** or Nicomachus.

² Van der Eijk 2000–2001, vol.2 102, argues that “The reason why . . . in the seventh” is Macrobius’ own addition.

- 74** Pseudo-Plutarchus, *Opinions of the Philosophers* 5.8 905F–906A (BT vol.5.2.1 p.137.13 et 19–20 Mau 1971)

How do monstrous births occur? . . . Strato [says that they result from] addition or removal or transposition [of certain parts] or inflation by *pneuma*.

Physiology

- 75** Galenus, *On Tremor* 6 (vol.7 p.615.16–616.4 Kühn 1824)

Nor do I praise Athenaeus, who says something about Asclepiades and Heraclides of Pontus and Strato the naturalist, but does
p.616 not mention any of the others, even though he could have stated not only these people’s opinions about shivering, but many more others which are no less reputed and plausible.

See also **Appendix 2–13**

Quae contra Platonis Phaedonem Strato disputavit

76 Damascius (?), In Platonis Phaedonem 69e6–72e2, versio secunda (63, t.2 p.321.15–28 Westerink 1977)

Ἀπορίαι Στράτωνος πρὸς τὸν πρῶτον λόγον τὸν ἀπὸ τῶν ἐναντίων.

α' Εἰ μὴ ἐκ τῶν ἐφθαρμένων τὰ ὄντα, ὥς ἐκ τῶν ὄντων τὰ ἐφθαρμένα, πῶς ἔχει λόγον πιστεύειν ὥς ἐρρωμένη τῇ τοιαύτῃ ἐφόδῳ;

5

β' Εἰ μὴ μόριον τεθνηκὸς ἀναβιώσκειται, οἷον δάκτυλος ἢ ὀφθαλμὸς ἐκκοπεῖς, δῆλον ὥς οὐδὲ τὸ ὅλον.

γ' Εἰ καὶ τὰ ἐξ ἀλλήλων γιγνόμενα κατ' εἶδος μόνον τὰ αὐτά, οὐ κατὰ ἀριθμόν.

δ' Εἰ ἐκ μὲν τροφῆς σάρκες, οὐ μὴν τροφή ἐκ σαρκῶν, καὶ ἰὸς ἐκ χαλκοῦ καὶ ἀπὸ ξύλων ἄνθρακες, οὐ μὴν ἀνάπαλιν.

10

ε' Εἰ ἐκ νέων γέροντες, οὐ μὴν ἀνάπαλιν.

ς' Εἰ σφζομένου τοῦ ὑποκειμένου δύναται ἐξ ἀλλήλων γίγνεσθαι τὰ ἐναντία, οὐ μὴν ἐφθαρμένου.

ζ' Εἰ μὴ ἀπολείπει ἢ γένεσις, καὶ μόνον κατ' εἶδος ἀεὶ γίγνηται, ὥς ἔχει καὶ τὰ τεχνητά.

15

12 *Tertullianus, De anima* 29.3 (p.41.17 Waszink 1947)

6 ἀναβιώσκειται *M* 7 ἐκκοπεῖς] εἰς *in ras.* *M* 16 γίγνηται] ἦτ *in ras.* *M*

77A Damascius(?), In Platonis Phaedonem 72e3–77a5, versio prima, 294.41 (t.2 p.173.1–3 Westerink 1977)

ὅτι Στράτων ἠπόρει, εἰ ἔστιν ἀνάμνησις, πῶς ἄνευ

Strato's Objections to Plato's *Phaedo*¹

- 76** Damascius (?), *On Plato's Phaedo* 69e6–72e2, second version (63, vol.2 p.321.15–28 Westerink 1977)

Difficulties [raised] by Strato against the first argument, the one from opposites.

1. If things that exist do not come from those that have been destroyed, in the way that those that have been destroyed come from those that exist, how is it reasonable to trust such an argument as a strong one?
2. If a part that has died, like a finger or an eye that has been cut out, does not come back to life, it is clear that the whole does not either.
3. Also [he raised the difficulty] whether the things that come from each other are the same only in kind, not numerically.
4. [And] whether flesh comes from food, but not food from flesh, and verdigris from copper and charcoal from wood, but not vice versa.
5. [And] whether old men come from young ones, but not vice versa.
6. [And] whether opposites can come from each other if what underlies is preserved, but not if it has been destroyed.
7. [And] whether coming-to-be does not cease, even if things come to be constantly only in terms of the kind, as is the case also with artefacts.

¹ **76–81** contain the reports, from two versions of notes of lectures given by Damascius, the last head of the Neoplatonist school at Athens in the sixth century AD, of objections advanced by Strato against the arguments for the immortality of the soul in Plato's *Phaedo*. We have placed them in a separate section to underline the fact that they may well be primarily dialectical and so should not necessarily be taken as containing evidence for Strato's own views on the soul. See in particular the note on **79** below, and Luciana Repici's chapter in the present volume. We have given the arguments in the order of the passages in the *Phaedo* itself to which they relate, although in the text of Damascius **76** is in an appendix and comes after **77B**.

- 77A** Damascius(?), *On Plato's Phaedo* 72e3–77a5, first version, 294.41 (vol. 2 p.173.1–3 Westerink 1977)

[He said that] Strato used to raise the problem: if recollection

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ἀποδείξεων οὐ γιγνόμεθα ἐπιστήμονες, πῶς δὲ οὐδεὶς
αὐλητῆς ἢ κιθαριστῆς γέγονεν ἄνευ μελέτης.

1–3 *Plutarchus* (?), *fr.216g* (BT t.7 p.136.26–28 Sandbach 1967), *Stratone nominato*

77B *Damascius* (?), *In Platonis Phaedonem* 72e3–77a5, *versio secunda* 25 (t.2 p.301.5–6 Westerink 1977)

διὰ τί μὴ ἀναμνήσκειται τις ἄνευ ἀποδείξεως, ὥς ἀπορεῖ
Στράτων; ἢ γοῦν ἀποδεικτικὴ ἀνάγκη πείθει τὴν ψυχὴν,
ἀλλ' οὐχ ἢ ἀνάμνησις.

78 *Damascius* (?), *In Platonis Phaedonem* 72e3–77a5, *versio secunda* (65, t.2 p.325.4–15 Westerink 1977)

Ἀπορίαι Στράτωνος πρὸς τὸν ἀπὸ τῶν ἀναμνήσεων λόγον·

Ἡ πρὸ χρόνου ἔχουσι τὰς ἐπιστήμας, οὕτω δὲ αἰεὶ
ἐπιστήμονές εἰσιν ἅτε μὴδὲν χρόνου προσδεόμεναι μηδὲ
πάσχουσαί τι ὑπ' αὐτοῦ· ἢ ἀπὸ χρόνου, καὶ τότε ἐπίστανται
ἄνευ τῆς ἀναμνήσεως ἅτε πρῶτον μανθάνουσαι. — ἢ καὶ 5
τότε τῆς πρὸ σώματος ἐνούσης ἐπιστήμης ἀναμιμ-
νήσκονται· ὁ γὰρ ποιητὴς αὐτῶν τελείας δὴ πού
πεποίηκεν, ἐπιστήμονας ἄρα· ἀλλὰ μὴν ἐλθοῦσαι ἐνταῦθα
μαθήσεως δέονται, ἀναμνήσεως ἄρα.

ἔτι δὲ πρὸς τούτοις ὁ Στράτων ἐν τῇ διαιρέσει 10
ἐκκλέπτει τὸν αἰεὶ τινα χρόνον· μεταξὺ γὰρ τοῦ τε πρὸ
χρόνου ὄντος καὶ τοῦ ποτὲ ὄντος ἐστὶ τὸ αἰεὶ ὄν ἐν χρόνῳ.

Διὰ τί οὖν οὐ πρόχειρος ἡ ἀνάμνησις; Ἡ τισὶ μὲν ἢ
ἀνάμνησις καὶ πρόχειρος, τοῖς δὲ πολλοῖς χρειαῖ γυμνασίας.

2, 5, 13 *in margine exhibet* α' *ad* ἡ (2), β' *ad* ἡ (5), γ' *ad* διὰ τί (13) *cod. M, quae tamen minimi momenti recte iudicavit Westerink* 2 ἢ *Finckh*: εἰ *M* 7 ὁ γὰρ *add. M*

exists, how is it that we do not come to have knowledge without demonstration, and how is it that no-one has become a pipe-player or a lyre-player without practice?¹

¹ This passage of Damascius is probably taken from a lost work of Plutarch. See Westerink 1977, vol.2 166.

77B Damascius (?), *On Plato's Phaedo* 72e3–77a5, second version, 25 (vol.2 p.301.5–6 Westerink 1977)

Why does not anyone recollect without demonstration — the problem raised by Strato? At any rate it is the necessity from demonstration that convinces the soul, not the recollection.

78 Damascius (?), *On Plato's Phaedo* 72e3–77a5, second version (65, vol.2 p.325.4–15 Westerink 1977)

Difficulties [raised] by Strato against the argument from recollection.

Either [the souls] possess knowledge before time,¹ and on this basis they are always in possession of knowledge because they are in no need of time and are not in any way affected by it; or else [they have it] from [a certain] time, and at that time they come to have knowledge without recollection, because they are learning for the first time. — Rather:² then too they are recollecting the knowledge that was in them before [they were in] the body. For their Maker made them complete indeed, and therefore in possession of knowledge; but when they have come to this [world] they need to learn, and so to recollect. Moreover, in addition to this, in his distinction Strato omits what is at every time; for between what is before time and what is at a certain time there is what is always [so] in time.

Then why is recollection not readily available? — Indeed for some people it is, but for the majority there is need for practice.

¹ Damascius, as his response shows, interprets this in the sense of being prior to time as transcending it altogether, and criticises Strato for allegedly omitting the third possibility of being everlasting in time. Whether Strato intended this is uncertain: Aristotle at *Physics* 4.12 221b3 says that eternal things are not *in* time.

² From here to the end of the paragraph is Damascius' response.

170 **Strato of Lampsacus**

- 79** Damascius (?), In Platonis Phaedonem 93a11–b6, versio prima (388.134, t.2 p.211.4–5 Westerink 1977)

ὅτι ὡς ἀρμονία ἀρμονίας ὀξυτέρα καὶ βαρυτέρα, οὕτω καὶ
ψυχὴ ψυχῆς, φησὶν ὁ Στράτων, ὀξυτέρα καὶ νωθεστέρα.

- 80** Damascius (?), In Platonis Phaedonem 102a10–107a1, versio prima (431–43, t.2 p.231.2–233.13 Westerink 1977)

Ἀπορίαι Στράτωνος <ι>γ' πρὸς τὸν λόγον·

ροθ'. Μήποτε καὶ πᾶν ζῶον οὕτω γε ἀθάνατον·
θανάτου γὰρ ἄδεκτον· οὐ γὰρ ἔσται ζῶον τεθνηκὸς οὐδὲ
ψυχὴ τεθνηκυῖα.

ροθ'. Οὕτως οὐδὲ τὸ σύνθετόν ποτε διαλυθήσεται·
ἄδεκτον γάρ ἐστι τοῦ ἐναντίου· οὐ γὰρ ἔσται ποτὲ διαλυθὲν
μένον γε σύνθετον. ⁵

ρπ'. Εἰ πολλαχῶς ἡ ἀπόφασις, ἀθάνατος ἡ ψυχὴ ἂν εἴη
οὐχ ὡς ζωὴ ἄσβεστος ἢ ζωὴν ἄσβεστον ἔχουσα, ἀλλ' ὡς

- 79** Damascius (?), On Plato's *Phaedo* 93a11–b6, first version (388.134, vol.2 p.211.4–5 Westerink 1977)

That as one attunement is sharper or flatter than another, so too one soul is, says Strato, keener or more sluggish than another.¹

¹ Plato at *Phaedo* 93ab has Socrates argue, against the view that soul is an attunement and therefore mortal, (i) that even if attunements admit of degrees, souls, just *qua* souls, do not. Plato indeed recognises (ii) that souls differ in character (93bc), but turns this to his advantage by supposing that this would have to be explained, absurdly, by a further attunement, or lack thereof, on top of the original one; so at this point the concession that attunements may admit of degrees is withdrawn. Then at 93d–94a Socrates argues (iii) that all souls are equally souls, so that if their being souls is explained in terms of their being attunements the fact that some are better and others worse cannot be explained in the same way. Strato agrees with Plato that souls differ in character, but points out that attunements can differ, not indeed by being more or less in tune, but by differing in pitch while all being in tune; the implication is that better and worse souls can all be attunements while differing in pitch. Strato could be raising a dialectical objection to Plato's argument; Damascius' response (quoted in Luciana Repici's paper in this volume, at n.22) suggests that he at least sees Strato as arguing for the identification of soul and attunement. The text in **Appendix 1**, which may or may not be by Strato, reports from Plato, without in the preserved part attacking, both (ii) and (iii). — Wehrli placed **79** apart from Strato's other objections to the arguments of the *Phaedo*, thereby reinforcing the impression that the present fragment is significant as a report of Strato's *own* views about the soul; but it surely formed part of the sequence of dialectical objections.

- 80** Damascius (?), On Plato's *Phaedo* 102a10–107a1, first version (431–43, vol.2 p.231.2–233.13 Westerink 1977)

Thirteen¹ difficulties [raised by] Strato against the argument.

178. May it not be that on this basis every living creature will be deathless? For it cannot admit death. For there will not be a dead living creature [any more than] a dead soul.

179. On this basis the compound will never be dissolved. For it cannot admit its opposite; for it will never be broken up while remaining a compound.

180. If there is more than one kind of negation, the soul will be deathless not as being unquenchable life or possessing

¹ Westerink's emendation for "three" of the MS. Gottschalk 1965, retaining "three," groups together arguments 178–85 and 186–89, leaving 190 as the third argument (the numbering is due to the position of these points in the larger sequence of notes that form the commentary).

μόνον ἑνὸς δεκτικῇ τῶν ἐναντίων καὶ μετὰ τούτου οὐσα ἢ μὴ οὐσα. 10

ρπα'. Μήποτε καὶ αἱ τῶν ἀλόγων ψυχαὶ οὕτως ἀθάνατοι, ὡς ἐπιφέρουσαι ζωὴν καὶ ἄδεκτοι τοῦ ἐναντίου τῷ ἐπιφερομένῳ.

ρπβ'. Μήποτε οὕτω καὶ αἱ τῶν φυτῶν· ζωοποιοὶ γὰρ καὶ αὗται τῶν σωμάτων. 15

ρπγ'. Μήποτε οὕτω καὶ ἡ φύσις ἐκάστη· τὸ γὰρ κατὰ φύσιν παρέχουσα πῶς ἂν δέξαιτό γε τὸ παρὰ φύσιν; ἄδεκτος δὲ οὐσα τούτου οὐκ ἂν ποτε φθαρείη.

ρπδ'. Μήποτε πᾶσα γένεσις ἀφθαρτος· ἄδεκτος γὰρ καὶ αὕτη τοῦ ἐναντίου· οὐ γὰρ ἔσται τι γιγνόμενον ἐφθαρμένον. 20

ρπε'. Μήποτε προχείρως εἴληπται ὡς, εἰ ἄδεκτος θανάτου καὶ ταύτη ἀθάνατος, ὅτι καὶ ἀνώλεθρος· ἀθάνατος γὰρ καὶ ὁ λίθος οὕτω γε, ἀλλ' οὐκ ἀνώλεθρος. 25

p.233 ρπς'. Πόθεν ὅτι συνεπιφέρει ζωὴν, ἵνα καὶ ἄδεκτος ἢ τοῦ ἐναντίου τῷ ἐπιφερομένῳ; ἐνίστε γὰρ ἐπιφερομένη ἐστίν.

ρπζ'. Μήποτε ζῶν ἐστι καὶ ἐπείσακτον ἔχει τὴν ζωὴν, ὥστε ποτὲ καὶ ἀποβάλλειν αὐτήν. 30

ρπη'. Μήποτε τὸν μὲν ἐναντίον θάνατον τῇ ἐπιφερομένῃ ζωῇ οὐ δέχεται, ἄλλον δὲ τὸν τῇ ἐπιφερούσῃ.

unquenchable life, but as being able to admit only one of the opposites, and either existing with this or not existing at all.²

181. May it not be that on this basis the souls of irrational creatures too will be deathless, since they impart life and cannot admit the opposite of what they impart?

182. May it not be that on this basis the [souls] of plants too [will be deathless]; for these too make bodies alive?

183. May it not be that on this basis each nature too [will be deathless]? For how can what imparts what is natural admit of what is unnatural? And if it cannot admit this it will never be destroyed.

184. May it not be that every coming to be will be indestructible? For this too cannot admit its opposite, for there will not be anything which is coming to be and has been destroyed.

185. May it not have been [too] readily assumed³ that, if [soul] cannot admit death and is deathless in this way, it is also indestructible? For a stone too will be deathless in this way, but not indestructible.

p.233 186. Where [does the claim] come from that [the soul] imparts life along with itself, so that it may be unable to admit the opposite of what is imparted? For sometimes [the soul] is imparted.⁴

187. May it not be that [the soul] is living and possesses life as something added to it, so that it can at some time also lose it?

188. May it not be that [the soul] does not admit the death which is opposite to the life that is imparted, but [admits] another [death which is opposite to the life] that imparts?⁵

² Gottschalk correctly argues that 180 summarises 178–79 and 185 summarises 181–84, but perhaps overstates the similarity between 178–80 and 181–85 in order to get three groups of arguments altogether. The essential point of 178–80 is that the argument that a dead soul is a contradiction in terms does not show that the soul exists for ever, but is equally compatible with the view that when the soul stops being alive it stops existing as well.

³ At *Phaedo* 105e–107a (which indeed shows Plato's awareness of the objection raised in our previous note).

⁴ The suggestion in 186–88 is that we should distinguish between a soul that is given life by something else and so can lose it, and that which imparts life itself. Damascius in **81**, as a Neoplatonist, interprets the latter as a higher, immortal principle, while acknowledging the mortality of the lower soul; but we need not suppose that Strato himself had this in mind. See also Repici, this volume, at n.32.

⁵ By contrast with objections 186 and 187, Strato now considers the other horn of the dilemma and argues that the if the soul is regarded as what imparts life, the relevant contrast will not be with death in the sense of the loss of life by what has previously received it. Gottschalk argues that the formulation, “the

ρπθ'. Μήποτε ὡς τὸ πῦρ, ἔστ' ἂν ἦ, ἄψυκτον, οὕτω καὶ ἡ ψυχὴ, ἔστ' ἂν ἦ, ἀθάνατος· καὶ γὰρ ἐπιφέρει ζωὴν ἔστ' ἂν ἦ.

35

ρφ'. Μήποτε, κἂν πάντα τὰ ἄλλα διαφύγωμεν, τὸ πεπερασμένην εἶναι καὶ δύναμιν ἔχειν πεπερασμένην οὐκ ἂν ἐλέγξαιμεν. ἔστω γὰρ καὶ ἐπιφέρουσα ζωὴν καὶ χωριστὴ κατ' οὐσίαν καὶ μὴ δεχομένη τὸν ἐναντίον τῇ ἐπιφερομένη ζωῇ θάνατον· καθ' ἑαυτὴν δὲ οὐσα καμειταί ποτε καὶ φθαρήσεται σβεσθεῖσα ἐφ' ἑαυτῆς, οὐδενὸς ἔξωθεν ἐπιόντος.

40

33–35 cf. *Damascium(?)*, *In Platonis Phaedonem 102a10–107a1, versio secunda* (79, p.333.17–19 Westerink), *Stratone non nominato*

41 ἐφ' *M*: ἀφ' *Finckh*

81 *Damascius (?)*, *In Platonis Phaedonem 102a10–107a1, versio secunda* (78, t.2 p.331.17–333.15 Westerink 1977)

ἀλλ' οὕτω γε, φησὶν ὁ Στράτων, οὐδὲ ἡ ἐν ὑποκειμένῳ ζωῇ τοῦ ἐναντίου δεκτικὴ· οὐ γὰρ μένει, εἴτα δέχεται τὸν θάνατον, οὐδὲ γὰρ ἡ ψυχρότης τὴν θερμότητα· ἀθάνατος ἄρα ἡ ἐν ὑποκειμένῳ ζωῇ, ὥσπερ ἄθερμος ἡ ψυχρότης, καὶ μὴν ἀπόλλυται.

5

ἔπειτα, φησὶν, οὐκ ἔστιν ἡ φθορὰ θανάτου παραδοχή, οὐδὲν γὰρ ζῶον οὕτω φθαρήσεται· οὐ γὰρ μένει ζῶον δεδεγμένον θάνατον, ἀλλὰ ἀποβαλὼν τὴν ζωὴν τέθηκεν· ἀποβολὴ γὰρ ζωῆς ὁ θάνατος.

ταῦτα μὲν ὁ Στράτων· ἐχρῆν δὲ διττὴν ὑποθέσθαι τὴν ζωὴν, καὶ περὶ τῆς ἐπιφερούσης εἶναι τὸν λόγον, ἥτις οὐ τῷ τεθνάναι τὸ ὑποκείμενον χωρίζεται, ἀλλὰ τῷ χωριστῇ

10

7 οὐδὲν *Westerink*: οὐδὲ *M* 8 ἀποβαλὼν *Finckh*: ἀποβάλλον *M* 11 οὐ τῷ *M'*: οὕτω *M'*

189. May it not be that, as fire cannot be cooled as long as it exists, so the soul is deathless as long as it exists? For it also imparts life as long as it exists.⁶

190.⁷ May it not be that, even if we escape all the other [objections], we will not refute [the argument that the soul] is limited and has a limited power? For let it impart life and be separable in its substance and not admit the death which is opposite to the life that is imparted; [even so], being on its own, it will grow weary at some point and be destroyed by being extinguished on its own,⁸ without anything assailing it from outside.

[life] which imparts” is due to Neoplatonist interpretation. See **81**, especially 28–36.

⁶This argument does not turn on the contrast between what imparts life and what receives it, but repeats the basic point of objections 180 and 185. Gottschalk is only able to group 186–89 together into a single dialectical structure by considering 189 *before* 188 in his commentary (p.167).

⁷It is not certain whether this objection, stated from the point of view of the Platonists, was made by Strato. Westerink argues, in accordance with his reading “thirteen” in line 1 above, that it was not, and compares (with Gottschalk, who does regard the present argument as Strato’s) an argument of the Peripatetic Boethus reported by Simplicius (see the apparatus to **81.23–25**). See also Repici, this volume, n.28.

⁸Or, with Finckh’s emendation, “by itself.”

- 81** Damascius (?), *On Plato’s Phaedo* 102a10–107a1, second version (78, vol.2 p.331.17–333.15 Westerink 1989)

But in this way, Strato says, the life in the subject does not admit its opposite either; for it does not remain, when it admits death, for neither does cold [remain when it admits] heat. So the life in the subject is deathless, just as cold is heatless, and yet it is destroyed.

Next, he says, destruction is not the admitting of death, for on this basis no living creature will be destroyed; for it does not remain a living creature when it has admitted death,¹ but it is by losing its life that it has died; for death is the losing of life.

Well, this is what Strato [said]. But it should have been supposed that life is of two sorts, and that the argument is about [the life] that imparts [life],² which becomes separate not by the subject dying but by being separable. For it was not something the

εἶναι. οὐ γὰρ πάθος ἦν τοῦ ὑποκειμένου, ἀλλ' οὐσία
συγκριθεῖσα αὐτῷ καὶ τὴν ὡς πάθος ζωὴν ἐν αὐτῷ
γεννήσασα, ὥσπερ ἐν τῷ φωτιζομένῳ οὐκ αὐτὸ τὸ φῶς, 15
ἀλλ' ἡ ἀπ' αὐτοῦ μέθεξις.

πρὸς τούτοις φησὶν ὁ Πρόκλος ὅτι τὸ ἀπόλλυσθαι τῇ
ψυχῇ θανατοῦσθαι ἐστίν, τὸ δὲ θανατοῦσθαι φαίνεται ὄν,
p.333 ὡς καὶ αὐτὸς ὁ Στράτων φησὶν, τὸ παθεῖν ἀποβολὴν ζωῆς
τὸ ὑποκειμένον· ἀλλὰ μὴν ἡ ψυχὴ οὐκ ἀποβάλλεται, ἀλλὰ 20
χωρίζεται, οἷα χωριστὴ οὖσα ζωὴ· οὐκ ἄρα ἀποθνήσκει·
ἀθάνατος ἄρα.

Ταῦτα μὲν ὁ Πρόκλος. ἀλλὰ μήποτε φαίη τις ὅτι τοῦτον
μὲν τὸν κατὰ ἀποβολὴν οὐκ ἀποθνήσκει θάνατον, καθ'
ἑαυτὴν δὲ γενομένη καὶ χωριθεῖσα, εἰ δὲ βούλει καὶ 25
ἐπιδιαμείνασα, ὕστερον ἀποσβέννυται, ὥσπερ καὶ αὐτὴ ἡ
ἐν ὑποκειμένῳ ζωὴ σβέσιν πάσχει, ἄλλο τι τοῦτο παρ' ὁ
πάθος τὸ ὑποκείμενον πάσχει. βέλτιον οὖν ἐκ τῶν
δεδειγμένων ἐπιχειρῆσαι θάνατον μὲν εἶναι τὴν σβέσιν τῆς
ζωῆς, ἣς οὐκ εἶναι δεκτικὴν τὴν ψυχὴν χωριστὴν οὖσαν 30
σώματος οὐ ἐστίν οὗτος ὁ θάνατος· ἐπεὶ τοῦ γε κατὰ
διάκρισιν δεκτικὴ ἐστίν, οὐ μὴν τοῦ ἐναντίου τῇ ἐπι-
φερομένῃ ζωῇ. οὐδὲ γὰρ πάσχει τοῦτο τὸ πάθος ὃ τὸ
ὑποδεέστερον πέφυκε πάσχειν, ἐπεὶ οὕτω γε ὁμοία ἔσται ἡ
ἐπιφερομένη ζωὴ τῇ ἐπιφερούσῃ, καὶ τὸ ἐν τῶν ἐναντίων, ὁ 35
θάνατος, δύο ζωαῖς ἀντικείμεται, ὅπερ ἄτοπον.

Ἄλλ' οὕτω ἡ ἀπορία λέλυται τοῦ δέος εἶναι μήποτε
πεπερασμένην ἔχουσα δύναμιν καθ' αὐτὴν ἀπόλλυται.

23–25 Boethius ap. [Simplicium], *In Aristotelis De anima* 430a23–26 (CAG t.11
p.247.23–26)

13 τοῦ ὑποκειμένου *Finckh*: τὸ ὑποκείμενον *M* 23 τις ἂν *Nv* 27 ἄλλο τι *Mf*:
ἀλλ' ὅτι *ut vid. M* 33 οὐδὲ *μ*: οὐδὲν *M*

subject undergoes, but a substance combined with it and producing in it the life which is an affection, just as what is in what is illuminated is not the light itself, but the participation that comes from it.

In addition to this Proclus says that for the soul to perish is to become dead, but to become dead is, as Strato himself too says, p.333 for the subject to undergo loss of life. But the soul is not lost, but becomes separate, being a life that is separable. So it does not die; so it is deathless.

This is what Proclus [said]. But might someone not say that it does not die this death which is in the loss, but when it has come to be on its own and has been separated, and if you will when it has continued to survive for a time, subsequently it is extinguished, just as the life in the subject itself undergoes extinction, but this is something different from what the subject undergoes?³ So it is better to argue from what has been shown that death is the extinction of life, and that the soul cannot admit this because it is separate from the body of which this is the death. For it can admit the [death] which is by separation, but not that which is opposite to the life which is imparted. For it does not undergo this affection which the inferior naturally undergoes, for on this basis the life which is imparted will be like the [life] which imparts it, and one of the opposites, death, will be opposed to two [different types of] life, which is absurd.

However, the difficulty has not yet been resolved that it is feared that [the soul] has a limited power [and so] is destroyed on its own.⁴

¹ To say “living creatures die by admitting death” is, it is argued, self-contradictory, for “this living creature is (now) dead” is as self-contradictory as Plato supposes “this soul is now dead” or “this snow is now hot” to be. And on this basis living creatures will be just as immortal as Plato argues their souls to be.

² See n.5 to **80**.

³ It is not clear whether this objection is Strato’s. See n.7 to **80**.

⁴ See **80.36–42**. The present text distinguishes two points which **80** combines: (a) the possibility that the death of the soul is logically distinct from that of the body, and (b) the possibility that the soul’s ceasing to exist – whether or not one calls this a type of “death” — is due to a decline in its own power. Both are compatible with, but do not require, the view that there is a lapse of time between the separation of the soul from the body and its own extinction (hence “if you will” in line 24), but (b) perhaps suggests this more strongly than does (a).

Cf. etiam **Appendix 1**

ETHICA ET POLITICA

82 Tabula inscriptionum ad opera ethica, politica, historica spectantium

- 1 Περὶ βασιλείας τρία] Diogenes Laertius, Vitae 5.59
- 2 Περὶ δικαιοσύνης τρία] Diogenes Laertius, Vitae 5.59
- 3 Περὶ τἀγαθοῦ γ´] Diogenes Laertius, Vitae 5.59
- 4 Περὶ βίων] Diogenes Laertius, Vitae 5.59
- 5 Περὶ εὐδαιμονίας] Diogenes Laertius, Vitae 5.59
- 6 Περὶ βασιλείας φιλοσοφίας] Diogenes Laertius, Vitae 5.59
(BP: Περὶ βασι^λ φιλ^ο F, ex quo Περὶ βασιλέως φιλοσόφου
Cobet: duos titulos, Περὶ βασιλείας (sed cf. no.1) et [Περὶ]
φιλοσοφίας distinxit Wehrli
- 7 Περὶ ἀνδρείας] Diogenes Laertius, Vitae 5.59
- 8 Περὶ ἡδονῆς] Diogenes Laertius, Vitae 5.59
- 9 Περὶ ἀδίκου] Diogenes Laertius, Vitae 5.60
- 10 Εὐρημάτων ἔλεγχοι δύο] Diogenes Laertius, Vitae 5.60; Clemens Alexandrinus, Stromata 1.14.61.1 (GCS t.15 p.38.22–39.1 Stählin 1906) = **86** (Στράτων δὲ ἐν τῷ περὶ εὐρημάτων); id. 1.16.77.1 (GCS t.15 p.50.10–16 Stählin 1906) = **85** (Στράτων ὁ Περιπατητικὸς ἐν τοῖς Περὶ εὐρημάτων); cf. etiam Plinius, Naturalis historia 1.7 (BT t.1 p.22.7 et 36–38 Mayhoff 1906) = **84** (Stratone qui contra Ephori εὐρήματα scripsit)

Cf. also **Appendix 1**

ETHICS AND POLITICS

- 82** List of titles referring to works on ethics, politics, history
- 1 *On Kingship*, three (books)] Diogenes Laertius, *Lives* 5.59
 - 2 *On Justice*, three (books)] Diogenes Laertius, *Lives* 5.59
 - 3 *On the Good*, three (books)] Diogenes Laertius, *Lives* 5.59
 - 4 *On [Ways of] Life*] Diogenes Laertius, *Lives* 5.59
 - 5 *On Happiness*] Diogenes Laertius, *Lives* 5.59
 - 6 *On the Kingly Philosophy*] Diogenes Laertius, *Lives* 5.59 (MSS BP: *On the Philosopher King* Cobet, on the basis of the abbreviated text in MS F: Wehrli distinguished two titles, *On Kingship* (but cf. no.1) and <On> *Philosophy*)
 - 7 *On Courage*] Diogenes Laertius, *Lives* 5.59
 - 8 *On Pleasure*] Diogenes Laertius, *Lives* 5.59
 - 9 *On the Unjust Man*] Diogenes Laertius, *Lives* 5.60
 - 10 *Two Refutations on Discoveries*] Diogenes Laertius, *Lives* 5.60; Clement of Alexandria, *Miscellanies* 1.14.61.1 (GCS vol.15 p.38.22–39.1 Stählin 1906) = **86** (“Strato in the [book] *On Discoveries*”); id. 1.16.77.1 (GCS vol.15 p.50.10–16 Stählin 1906) = **85** (Strato the Peripatetic in the [books] *On Discoveries*”); see also Pliny, *Natural History* 1.7 (BT vol.1 p.22.7 et 36–38 Mayhoff 1906) = **84** (“Strato who wrote against Ephorus’ *Discoveries*”)

Ethica

83 Stobaeus, Eclogae 2.7.4a (p.53.22–54.9 Wachsmuth 1884)

p.54 ἀγαθόν ἐστιν ἅφ' οὗ συμβαίνει τὸ ὠφελεῖσθαι· καὶ οὗ πάντ' ἐφίεται τὰ λόγον ἔχοντα προηγουμένως· καὶ ὃ ἦτοι κατὰ φύσιν ἐστίν, ἢ ποιητικὸν τοῦ κατὰ φύσιν· καὶ τὸ ὀρεκτικὸν κατὰ φύσιν· καὶ τὸ κινητικὸν τῆς κατὰ φύσιν ἐχούσης ὀρέξεως, καὶ καθ' ὃ ἕκαστον εὖ ἔχει ὅσον ἐπὶ τῇ ἐκείνου 5 παρουσίᾳ, ἢ ποιητικὸν ἐστὶ τοῦ τοιούτου· καὶ ὃ ἦτοι δι' αὐτό ἐστιν αἰρετόν, ἢ τοῦ αἰρετοῦ ποιητικόν· καὶ ὃ ἦτοι εὐδαιμονία ἐστίν, ἢ συμβαλλόμενον πρὸς εὐδαιμονίαν· καὶ καθάπερ Στράτων, τὸ τελειοῦν τὴν δύναμιν, δι' ἣν τῆς ἐνεργείας τυγχάνομεν· καὶ τὸ σωστικὸν τῆς ἐκάστου 10 οὐσίας, καθ' ὃ κριθήσεται τῶν κατὰ μέρος τὰ μετέχοντα τῆς τοιαύτης δυνάμεως· καὶ πολλαχῶς ἄλλως.

1 Stoici ap. Sextum Empiricum, M. 11.33 = SVF 3.75 1–2 οὗ πάντ' ἐφίεται] Aristoteles, Eth. Nic. 1.1 1094a3 6–7 Aristoteles, Rhet. 1.6 1362a22, 1.7 1363b13; τινὲς ap. Sextum Empiricum, PH 3.172; cf. etiam Aristotelem, Eth. Nic. 1.6 196b10–13 7–8 ἄλλοι ap. Sextum loc. cit.

1 οὗ F: οὐ P 4 καὶ] ἢ Meineke 5 καθ' ὃ Canter: καθὼ FP 7 αὐτό Heeren: αὐτὸ FP <δι' αὐτό> αἰρετόν Meineke 9 Στράτων P 11 καθ' ὃ κριθήσεται Usener: καθοραθήσεται FP: καθὼ κρατήσῃ τῶν μερῶν Heeren 12 ἄλλων F

De repertis et inceptis

84 Plinius, Naturalis historia 1.7 (BT t.1 p.22.7 et 36–38 Mayhoff 1906)

EX AVCTORIBVS . . . Stratone qui contra Ephori εὐρήματα scripsit.

1 Stratone] ita adnotavit Wehrli: “Stratone Rd: Statone T: lacunam a,” sed haec ex editione a Sillig anno 1851 confecto (t.1 p.26 n.28) sumpsit; de re omnino tacet et Mayhoff et Beaujeu (CB 1950) εὐρήματα] theorematum editores ante Hardouin 2 scripsit om. a

Ethics

83 Stobaeus, *Selections* 2.7.4a (p.53.22–54.9 Wachsmuth 1884)

p.54 The good is that from which benefit results;¹ and that which all things which possess reason desire in a primary way;² and what either is natural, or produces what is natural; and what naturally prompts desire; and what prompts a desire that is in a natural state; and that according to which each thing is in a good condition as far as depends on its presence, or what produces a thing of this sort; and what is either deserving of choice on its own account,³ or produces what is deserving of choice; and what either is happiness, or contributes to happiness; and as Strato [said], what brings to completion the potentiality on account of which we achieve the actuality; and what preserves the substance of each thing, according to which those particulars which partake of such a power will be judged; and [it is defined] in many other ways too.

¹ The Stoic definition: *SVF* 3.75.

² “That which all things desire” recalls Aristotle, *Nicomachean Ethics* 1.1 1094a3. But the qualifications “which possess reason” and “in a primary way” have been added. This text comes from “Doxography A” in Stobaeus 2.7, which has in the past been attributed to Arius Didymus; but this is doubly questionable, both as to whether all three doxographies in this chapter derive from the same author, and as to the very identity of “Arius Didymus” in any case. See Göransson 1995, 221–26. It is noteworthy that Strato’s definition is the *only* one attributed to a specific author in the present text.

³ This is found in Aristotle’s *Rhetoric*; it is also contrasted by Sextus with the following definition in terms of happiness, as held by two different unnamed groups of people.

On discoveries and origins

84 Pliny, *Natural history* 1.7 (*BT* vol.1 p.22.7 and 36–38 Mayhoff 1906)

[Information in book 7 is] from [the following] authors . . . Strato, who wrote against Ephorus’ *Discoveries*. . .

182 Strato of Lampsacus

- 85** Clemens Alexandrinus, *Stromata* 1.16.77.1 (GCS t.15 p.50.10–16 Stählin–Fruchtel–Treu 1985)

Σκάμων μὲν οὖν ὁ Μιτυληναῖος καὶ Θεόφραστος ὁ Ἑρέσιος Κύδιππος τε ὁ Μαντινεύς, ἔτι τε Ἀντιφάνης καὶ Ἀριστόδημος καὶ Ἀριστοτέλης, πρὸς τούτοις δὲ Φιλοστέφανος, ἀλλὰ καὶ Στράτων ὁ Περιπατητικὸς ἐν τοῖς
2 Περὶ εὐρημάτων ταῦτα ἱστόρησαν. παρεθέμην δὲ αὐτῶν 5
ὀλίγα εἰς σύστασιν τῆς παρὰ βαρβάροις εὐρετικῆς καὶ βιωφελοῦς φύσεως, παρ’ ὧν Ἕλληνες τὰ ἐπιτηδεύματα ὠφέληνται.

1–8 Eusebius, *Praep. Ev.* 10.6.14 (GCS t.43.1 p.577.14–20 Mras 1954), ex Clemente, *Stratone nominato* 1–5 Scamon, *FGrH* 476T3 (t.3B p.436.1–6); Theophrastus, *fr.*728 FHS&G; Aristoteles, *FHG* t.2 p.181 Müller 2 Cydippus, *FHG* t.4 p.376 Müller 3 Aristodemus, *fr.*13 (*FHG* t.3 p.311 Müller) 4 Philostephanus, *fr.*28 (*FHG* t.3 p.32–33 Müller)

1 σκάμμων Eusebii *codd.* IO 2 ερέσιος (sic) corr. ex αιρέσιος L: ἐφέσιος Eusebii *codd.* Ἀριστοφάνης Eusebii *codd.* BN 5 εὐρεμάτων L et Eusebius

- 86** Clemens Alexandrinus, *Stromata* 1.14.61.1 (GCS t.15 p.38.22–39.1 Stählin–Fruchtel–Treu 1985)

πάλιν αὖ Χίλωνι τῷ Λακεδαιμονίῳ ἀναφέρουσι τὸ “μηδὲν ἄγαν”. Στράτων δὲ ἐν τῷ περὶ εὐρημάτων Σωδάμῳ τῷ Τεγεάτῃ προσάπτει τὸ ἀπόφθεγμα, Δίδυμος δὲ Σόλωνι
p.39 αὐτὸ ἀνατίθῃσιν, ὥσπερ ἀμέλει Κλεοβούλῳ τὸ “μέτρον ἄριστον.” 5

1–3 Schol. in Euripidis *Hippolytum* 264 (t.1 p.39.3–6 Schwartz 1887), epigrammate Tegeae inscripto in testimonium vocato; brevius Schol. in Pindari *Pyth.* 2.63 (*BT* t.2 p.42.20–22 Drachmann 1910), quod ad dictum γνῶθι σαυτὸν per incuriam refert Drachmann; quorum neuter Stratonem nominat

2 Στράτων VI: στρωμάτων L Σωδάμῳ schol. in Eurip. *Hipp.*: στρατοδημῳ L: Σωδήμῳ Wilamowitz

- 85** Clement of Alexandria, *Miscellanies* 1.16.77.1 (GCS vol.15 p.50.10–16 Stählin–Fruchtel–Treu 1985)

Scamon of Mytilene, Theophrastus of Eresus and Cydippus of Mantinea,¹ and also Antiphanes² and Aristodemus³ and Aristotle, and in addition to these Philostephanus, and also Strato the Peripatetic in the [books]⁴ *On Discoveries* recorded these things.⁵

- 2 I have set out a few of their [points] in order to establish the talent for discovery and for benefitting our lives that is present among the barbarians, by whom the Greeks have been benefitted in their customary practices.

¹ Otherwise unknown. See Kroll 1922.

² Apparently otherwise unknown.

³ Aristodemus (29) in *RE*; possibly identical with Aristodemus (28), who was a pupil of Aristarchus. and if so to be dated to the second century BC.

⁴ Or “writings.” In the case of Theophrastus we have independent evidence that *On Discoveries* was the actual title of one of his works (727 no.11 FHS&G), as we do also in that of Philostephanus (fr.28, *FHG* vol.3 p.32–33). Strato’s actual title seems to have been *Two Refutations on Discoveries* (82 no.10), but that does not exclude *On Discoveries* being intended as a looser form of the title. As for Aristotle, Müller (*FHG* vol.2 p.181) questions whether the present text indicates a work with this title, but prints it as one none the less. For the other authors cited in this passage, where no specific footnote is given, see the Index of Passages Cited.

⁵ What precedes is a listing of discoveries by barbarians.

- 86** Clement of Alexandria, *Miscellanies* 1.14.61.1 (GCS vol.15 p.38.22–39.1 Stählin–Fruchtel–Treu 1985)

Again, they attribute “nothing in excess” to Chilon the Spartan. But Strato in his *On Discoveries* attaches the saying to Sodamus of Tegea, and Didymus assigns it to Solon, as indeed he does “[due] measure is best” to Cleobulus.

p.39

MISCELLANEA

87 Tabula inscriptionum ad opera miscellanea spectantium

- 1 Λύσεις ἀπορουμένων] Diogenes Laertius, Vitae 5.59
- 2 Ὑπομνήματα, ἃ διστάζεται] Diogenes Laertius, Vitae 5.60
- 3 Ἐπιστολαὶ ὧν ἡ ἀρχή· “Στράτων Ἀρσινόῃ εὖ πράττειν”]
Diogenes Laertius, Vitae 5.60

cf. etiam **82** no.6

APPENDIX

app. CPF iii 213–14 = PHeid G inv.28 col. II + PGraecMon 21 fr.A col.

1 I
(dub.)

PHeid	[ἄρα ὧδε ψυχὴ βελτίων καὶ χείρων]	
col. II	[ἔσ]ται ὅτι [οἷόν τε ἀρ]μο-	
	νίαν ἀρμονίαν [ἔ]χειν κ[αὶ]	
	[ἀ]ρμονίαν <ἀν>αρμ[οσ]τίαν; η	
	[τί] ὅ τρ[ό]πος; ταῦτα γὰρ	5
	[δὴ ἄ]τοπα δοκεῖ. εἴτα	
	[ψυ]χὴ μὲν ψυχῆς βελτίω-	
	[ν κ]αὶ χείρων ἐστίν, ἀρμο-	
	νία δὲ ἀρμογίας καὶ βελ-	
	τίων καὶ χείρω<ν> οὐκ ἐστίν,	10
	ὥσθ' ἕτερον ψυχὴ ἀρμο-	
—	γ[ί]ας. ἔπειτα[α] ὅκ ἂν	
	δήπου, φησὶν, οὐ[θ'] ἀρμο-	
	νία οὐτ' ἄλλη τ[ις] σύν-	
	θεσις ἄλλως περ [ἔ]χοι ἢ	15
	[ὡ]ς ἐκεῖνα ἔχει ἐξ [ὧν ἂν συγ-	
	[κεῖται]	

1–6 *conferendus Plato, Phaedo 93c* 6–12 *conferendus Plato, Phaedo 93d–94a*;
etiam **79** 12–17 *Plato, Phaedo 92e4–93a2*; cf. etiam 94be

1 *suppl. Sedley (1996)* 2 ἔσ et οἷόν τε *suppl. et ὅτι legit Sedley* 5 τί *suppl. et*
ὁ *legit Sedley* 7 ψυχὴ (*pr.*) *legit Manfredi* ψυχῆς *Sedley*: ψυχῆ *Carlini* 8
suppl. Turner 9 ἀρμονίας *Sedley*: ἀρμονία *Carlini* 12 ἔπειτα[α] ὅκ ἂν



MISCELLANEOUS

87 List of titles referring to miscellaneous works

- 1 *Solutions to Puzzles*] Diogenes Laertius, *Lives* 5.59
- 2 *Memoranda* (dubious)] Diogenes Laertius, *Lives* 5.60
- 3 Letters beginning “Strato to Arsinoe, greeting”] Diogenes Laertius, *Lives* 5.60

cf. also **82** no.6

APPENDIX

app. CPF iii 213–14 = PHeid G inv.28 col. II + PGraecMon 21 fr.A col.

1 I¹
(dub.)

PHeid <Is it in the following way that a soul will be better or worse>,²
col. II that it is possible for an attunement to have an attunement
and also for an attunement to have a lack of attunement?³ But
in what way? For this indeed seems absurd. Next, one soul
is better or worse than another soul, but an attunement is
not better or worse than another attunement, so a soul is
different from an attunement.⁴ Next, “I suppose,” he⁵ says,
“neither an attunement nor any other composition is in a
different state than that of the things from which it is com-
posed. . . .”

¹ Sedley (1996) speculates that the work of which parts are preserved in these
two papyri (there are traces of 57 lines in all, but only the two passages included
here are preserved well enough to give us a continuous sense) may be the work
by Strato reported in **76–81**. If so, it must be due to coincidence that the legible
parts report Plato’s arguments rather than objecting to them.

² Supplied conjecturally by Sedley (1996).

³ Cf. Plato, *Phaedo* 93c.

⁴ Cf. Plato, *Phaedo* 93d–94a, and above, note to **79**.

⁵ Socrates in Plato’s *Phaedo*; the words are a paraphrase of 92e4–93a2. Com-
pare also 94be.

Bilabel, approbat Sedley: ἐπειτ[.]..υκαν Carlini 13 interpunxit Sedley 15
ἔχει Sedley: ἔχει Carlini 16–17 ὧν ἂν συγκέηται Bilabel, Platonis Phae-
donem 92e4–93a2 conferens: ὧν σύγ|κεται Carlini, Nemesii De natura hominis
2 p.23.2–3 Morani conferens

186 Strato of Lampsacus

PMon	[	].λεθρον ει	
fr.A	[ἐστι τὸ ἀ]	θάνατον ἐξ ἀ-	
col.1	[νάγκης] ἀνώλεθρον ἢ		
	[δέ που] τῆς ζῆς ιδέ-		
	[α. ὅ τε θε]	ὅς ἀθάνατα	5
	[καὶ ἀνὼ]	λεθρά ἐστιν ὥσ-	
	[τε καὶ] ἡ ψυχὴ, ἐπειδὴ		
	[ἀθάνα]	τόν ἐστι, καὶ ἀ-	
	[νώλεθ]	ρ[ο]ν ἂν εἴη. προ	
	[	].ὅτι ἡ ψυχὴ ἀθά-	10
	[νατόν ἐσ]	τιν. ἄρα γ[ε	
	[	]ρετ[	
	[	]κ[	

1–13 *conferendus Plato, Phaedo 106de; cf. tamen quae ad translationem adnotantur*

2 ἐστι τὸ ἀθάνατον *Sedley*: δὴ ἐστιν ἀθάνατον *Wicken*: τι ἐστιν ἀθάνατον *Carlini* 4 δέ που *Sedley*: αὐτῆς *Carlini*: αὐτὴ γε *Coppola* 5 ὅ τε θε]ὸς *Sedley* (*cf. Phaedonem 106d5*): εἰ οὖν ἄπ]ερ *Carlini* 6–7 ὥστε καὶ *Sedley*: ὠσαντῶς *Carlini* 9–10 πρόσ[φορον δ]ῆ ὅτι *Carlini*: προσ[ομολογ]ῶ ὅτι *Wilkes*: *quorum neutrum accepit Sedley*

Strato Erasistrati discipulus

app. Soranus, *Gynaec.* 4.14.4 (CMG t.4 p.145.5–9 Ilberg 1927)

2

(dub.) Στράτων δὲ ὁ Ἐρασιστράτειος εἰς χύτραν ἀργυρᾶν ἢ χαλκῆν κασσιτέρῳ περικεχυμένην ἀρώματα βάλλει νάρδον, κασίαν, ἔτι δὲ πράσιον, ἀρτεμισίαν, δίκταμνον, σούσινον, ῥόδιον, μέλι, καὶ κρατήσας τὸ πωμάτιον αὐλίσκον περιτίθησιν, οὗ τὸ ἕτερον πέρασ εἰς τὸ γυναικεῖον 5 ἀρμόζει αἰδοῖον, καὶ πυριᾶ τοὺς τόπους δι' ὀλίγου πυρὸς ἀναθερμαίνων τὰ ἀγγεῖα.

2 βάλλειν *P*: βάλλοι *Dietz* 3 κασίαν *P* πράσιον *P* 5 παρεντίθησιν *Kalbfleisch* 6 *fort.* αἰδοῖον ἀρμόζει *Ilberg*

PMon . . . If the deathless is of necessity indestructible, the Form of
fr.A Life, I suppose, and God are both deathless and indestruc-
col.I tible. Consequently the soul too, since it is deathless, will
also be indestructible.⁶ . . . the soul is deathless.⁷ . . .

⁶This echoes the argument of Plato, *Phaedo* 106de; compare **80** and **81**. But, as Sedley (1996) 453–54 points out, the beginning of the word “attunement” (or a cognate form) can be read in line 8 of the next, fragmentary column; so it seems that the papyrus text is a discussion of the arguments for immortality in the *Phaedo* rather than a paragraph-by-paragraph commentary. It also seems that the argument of 106de may have been mentioned in the course of the discussion of attunement, or at least (since we cannot be certain that the separately preserved columns appeared in the order in which they are presented here) that the arguments were not discussed in the same order in which they appear in Plato’s dialogue.

I have here translated Sedley’s supplements. Carlini’s would give rather “If anything is deathless, of necessity the Form of Life itself is indestructible. If then the things that are deathless are also indestructible, in the same way the soul too, since it is deathless, will also be indestructible.”

⁷Carlini conjectures “It is appropriate that the soul is deathless”; Wilkes, “I agree that the soul is deathless.” Sedley accepts neither.

Strato the pupil of Erasistratus

app. Soranus, *Gynaecology* 4.14.4 (CMG vol.4 p.145.5–9 Ilberg 1927)
2

(dub.) Strato the follower of Erasistratus places aromatic substances into a silver or bronze vessel covered with tin: spikenard, cassia, also horehound, wormwood, dittany, [oil] of lilies, rose-[oil], honey, and putting on the lid he fits a small pipe, of which the other end fits into the woman’s genitals, and he fumigates the region, heating the vessel with a small fire.¹

¹ As a treatment for retention of the afterbirth. The procedure of fumigation described here was a standard gynaecological treatment. Laurence Totelin notes that all the medicinal substances listed here are common in Hippocratic gynaecological recipes. I am most grateful to Dr Totelin for her help in interpreting the medical recipes in this Appendix.

app. Galenus, *De differentia pulsuum* 4.17 (t.8 p.759.3–15 Kühn
3 1824)
(dub.)

ἄξιον οὖν ἴσως ἐστὶ καὶ τῶν περὶ τὸν Ἑρασίστρατον
 μνημονεῦσαι, διενεχθέντων καὶ αὐτῶν πρὸς ἀλλήλους οὐχ
 ἦττον ἢ οἱ ἄλλοι. τὸ γάρ τοι θαυμάσιον τοῦτ' ἔστιν, ὅτι μὴ
 μόνον ἀπὸ διαφερουσῶν αἰρέσεων, ἀλλὰ καὶ αὐτῶν τῶν
 ἀφ' ἑνὸς ἀνδρὸς ἀναγομένων οἱ πλεῖστοι διεφώνησαν, ἔνιοι
 δὲ καὶ δύο καὶ τρεῖς ὅρους ἔγραψαν, ὥσπερ Ἀπολλώνιος ὁ
 ἀπὸ Στράτωνος ἕνα μὲν τόνδε· σφυγμός ἐστι κατὰ τὴν
 ἐπιπλήρωσιν τοῦ ἀπὸ καρδίας πνεύματος ἐκπεμπομένου
 περὶ τὴν ἀρτηρίαν διάστασις γινομένη. δεύτερον δὲ τόνδε·
 σφυγμός ἐστιν ἡ ἀπὸ τῆς ἀρτηρίας διάστασις καὶ συστολὴ
 ἀπὸ τῆς ἐν αὐταῖς παρακειμένης καὶ ἀνάλογον δυνάμεως.
 τρίτον δ' ἄλλον· σφυγμός ἐστι διάστασις, καθ' ἣν πρὸς τὴν
 ἀφὴν ἡ ἀρτηρία προσπίπτει.

app. Galenus, *De venae sectione adversus Erasistrateos Romae degen-*
4A *tes* (p.32.13–33.12 Kotrc 1970 = t.11, p.196.13–197.12 Kühn
(dub.) 1826)

ζητεῖται δὲ νῦν οὐχ ἀπλῶς τί βέλτιον ἐστίν, ἀλλ' εἰ φαίνεται
 χρωόμενος Ἑρασίστρατος τῷ βοηθήματι. τοῦτο δ' οἱ μὲν
 ἔμπροσθεν, ἡνίχ' ἦκον εἰς Ῥώμην τὸ πρῶτον, ἅπαντες
 ἠρνοῦντο τῶν Ἑρασιστράτου μαθητῶν, οἱ δὲ δοκιμώτατοι
 ὦν αὐτὸς οἶδα, νῦν ὡς μικρῷ τινι παραλλάττουσιν αὐτῶν.

3–4 ἅπαντ' ἠροῦντο *UM* 4 οἱ δὲ δοκιμώτατοι *Basel ed. (in marg.) Chartier*
Kühn: τοῖς δοκιμωτάτοις *codd.* (δυσκ- *S*): τοὺς δοκιμωτάτους *Basel ed.* 5
 ὦν *Kotrc*: ὡς *codd.*, *Basel ed.*: οὗς *Basel ed. (in marg.) Chartier Kühn* οἶδε
M μικρῷ *UM*: σμικρῷ *edd. Kotrc* αὐτῶν *edd.*: αὐτοῦ *ut vid. U*: αὐτο (sic)

app. Galen, *On the difference in pulses* 4.17 (vol.8 p.759.3–15 Kühn 3 1824)

(dub.)

Perhaps it is worth also mentioning the followers of Erasistratus, as they too disagree with each other no less than the others. What is remarkable is that not only most of those from different sects disagree, but even most of those who are led by one man, and some have given two or three definitions, as Apollonius the [follower]¹ of Strato has given one as follows: “pulse is the dilation from the filling of the artery with the pneuma sent out from the heart.” The second is this: “pulse is the dilation and contraction resulting from the power which is present in the arteries and proportioned.” The third is different [again]: “pulse is the dilation with which the artery presses on one’s touch.”²

¹ Kühn interprets as “the son of Strato,” presumably intending this in a literal sense rather than metaphorically in terms of professional allegiance. The expression is odd, as Vivian Nutton points out to me: *hoi apo* in the plural is used to indicate the followers of a particular individual (LSJ s.v. *apo* III.1.c: e.g. Plutarch, *Brutus* 2, *hoi apo Platōnos*), but the singular and the application to a named individual as the follower are not. This is the only place in Galen or pseudo-Galen in the TLG where *ho apo* appears with *apo* followed by the name of a person, rather than a place. This is Apollonius (100) in *RE*; see Wellmann 1895, 149.

² The third definition is consistent with both the first and the second, but the first and the second could appear inconsistent, the first suggesting with Erasistratus that the pulse is propagated from the heart, the second that it is generated in the arteries themselves. Cf. Galen, *On Anatomical Procedures* 7.16, vol.2 p.646.4–648.5 Kühn.

app. Galen, *On the cutting of veins*,¹ *against the followers of Erasistratus living at Rome* (p.32.13–33.12 Kotrc 1970 = vol.11, p.196.13–**4A** 197.12 Kühn 1826)
(dub.)

The question at present is not simply what is better, but whether it is clear that Erasistratus used [this] remedy. The earlier followers of Erasistratus, when I first came to Rome, all denied this, but the most notable of those whom I myself know now differ from them to a small extent. Let me disregard the others and mention

¹ I.e. blood-letting.

p.33 ἵνα γὰρ ἑάσας τοὺς ἄλλους Στράτωνος μνημονεύσω, διὰ παντὸς μὲν Ἑρασιστράτῳ συγγενομένου, γράψαντος δ' ἐπὶ τῆς οἰκίας αὐτοῦ καὶ διὰ τοῦτο λεγομένου δεδουλευκέναι τάνδρι, τὰ τ' ἄλλα, φησὶν ἐκεῖνος, Ἑρασίστρατον ἐπαινεῖσθαι δίκαιόν ἐστι καὶ ὅτι χωρὶς φλεβοτομίας ἐθε-
 10 ράπευεν ἃ μετὰ τοῦ φλεβοτομεῖν οἱ πρόσθεν ἐπεχείρουν ἰᾶσθαι. καὶ μέντοι καὶ αὐτὸς ὁ Στράτων φαίνεται διὰ τῶν ἰδίων συγγραμμάτων αἰετὰς θεραπείας χωρὶς φλεβοτομίας ποιοῦμενος, καὶ τί θαυμαστὸν Ἑρασίστρατον ἔπεσθαι τὰ
 15 πάντα Χρυσίπῳ τῷ Κνιδίῳ προηρημένον ἀποστῆναι τοῦ φλεβοτομεῖν ὥσπερ κάκεῖνος; οὕτω δὲ καὶ Ἀριστογένης καὶ Μῆδιος, οἳ τ' ἄλλοι πάντες οἱ ἀπὸ τοῦ Χρυσίππου φαίνονται ποιοῦντες.

14–18 *Erasistratus, fr.62a Garofalo*

ut vid. M 6 Στράτωνος *UM* 7 συγγενόμενος *UM* 8 τοῦτο] τοῦ *UM* 15
 Χρυσίπῳ *UM* Κνιδίῳ *UM*

app. Galenus, *De venae sectione adversus Erasistratum* (t.11, p.151.5–
4B 16 Kühn 1826)
(dub.)

δοκεῖ γὰρ αὐτῶν οὐδενὶ τὰ αὐτὰ, καὶ τὸ πάντων δεινότατον, ὅτι μὴδ' αὐτοῖς τοῖς συμφοιτηταῖς μὲν τοῦ Ἑρασιστράτου, μαθηταῖς δὲ Χρυσίππου τοῦ Κνιδίου, οὐπὲρ δὴ πρώτου τὸ δόγμα τοῦτ' ἦν, μὴ χρῆσθαι φλεβοτομίᾳ· οὐδὲ γὰρ ἐκείνοις ὁμολογεῖται περὶ τῆς
 5 Χρυσίππου γνώμης οὐδέν. ἀλλὰ τὰ μὲν ὑπὸ τε Ἀποιμάντου καὶ Στράτωνος εἰρημένα καταγέλαστα. καὶ γὰρ τὸ σχάσαι τὴν φλέβα δύσκολον εἶναι φασιν καὶ τὸ διαγνῶναι καὶ τὸ διαιρῆσαι τὴν ἀρτηρίαν αὐτὴν, μετὰ δ' ἐν τούτῳ κακὸν ἀποβαίνει, εἰ ἀντὶ φλεβὸς ἀρτηρίαν διαιρεῖσθαι συμβαίνει
 10 καὶ ὅτι δέσας τις ἔθανεν, ὁ μὲν καὶ πρὸ τοῦ τμηθῆναι τὸ ἀγγεῖον, ὁ δὲ καὶ τμηθεὶς οὐκ ἀνεκομίσθη· καὶ ὅτι ἡμορράγησέ τις ἀνεπισχέτως.

app. Rufus, ap. Oribasium, *Coll. med.* 45.28.1 (CMG t.6.2.1 p.184.2–8
5 Raeder 1931)
(dub.)

οὐδὲν μὲν παρὰ τῶν παλαιῶν περὶ τῆς ἐλεφαντιάσεως

p.33 Strato, who was an associate of Erasistratus throughout, wrote in his house² and for this reason is said to have been the man's slave. He says that it is right to praise Erasistratus especially because he treated without the cutting of veins the things which his predecessors tried to cure with cutting of veins. And indeed from his own writings it is clear that Strato always carried out his treatments without the cutting of veins. And how is it surprising that Erasistratus in everything followed Chrysippus of Cnidus,³ making it his policy to refrain from cutting the veins, as he too had done? And this is what Aristogenes and Medius⁴ too, and all the other followers of Chrysippus, clearly did.⁵

² I.e. his medical school: Kotrc 1970, 238 n.2.

³ Fourth century BC: student of Eudoxus and teacher of Metrodorus the teacher of Erasistratus. Kotrc 1970, 238 n.3.

⁴ Aristogenes and Medius were students of Chrysippus of Cnidus (Galen, *De curandi ratione per venae sectionem* 2, vol.11 p.252.15 Kühn) and Medius was uncle of Erasistratus. Kotrc 1970, 238 n.5.

⁵ On this passage cf. Kind 1931, 316.

app. Galen, *On the cutting of veins, against Erasistratus* (vol.11, **4B** p.151.5–16 Kühn 1826)
(dub.)

None of them has the same opinions, and what is strangest of all is that not even the fellow-students of Erasistratus, pupils of Chrysippus of Cnidus who first held this doctrine, use cutting of the veins; for they do not agree in anything concerning the opinion of Chrysippus. What is said by Apoemantus and Strato is ridiculous. For they say that it is troublesome to slit the vein and to distinguish and divide the artery itself; and then there is a bad result in this, if one happens to divide an artery rather than a vein; and that people have died from fright, in one case before the vessel was cut, while another did not recover after it had been; and that someone had an unstoppable haemorrhage.

app. Rufus, quoted by Oribasius, *Medical Collection* 45.28.1 (CMG **5** vol.6.2.1 p.184.2–8 Raeder 1931)
(dub.)

We have heard nothing from the ancients about elephantiasis,

192 Strato of Lampsacus

ἀκηκόαμεν, καὶ θαυμάζειν ἄξιον εἰ οὕτω μέγα καὶ χαλεπὸν νόσημα καὶ πολλοῖς γινόμενον παρῆιδον ἱκανοὶ ἄνδρες πᾶν καὶ τὸ βραχύτατον κατασκέψασθαι· μόνος ἡμῖν Στράτων ὁ τοῦ Ἑρασιστράτου μαθητῆς ἐννοίας παρέσχε τοῦ πάθους, 5
κακοχυμίαν αὐτὸ ὀνομάζων· τὸ γὰρ εἰς Δημόκριτον ἀναφερόμενον βιβλίον περὶ τοῦ νοσήματος φανερώς κατέψευσται.

4 στρατῶν R²

app. Erotianus, *Vocum Hippocraticarum collectio* 103 (p.23.8–12 et 6 21–23 Nachmanson 1918)
(dub.)

ἄμβην· Στράτων μὲν ὁ Ἑρασιστράτειός φησι τὴν ἄμβην μοχλὸν σφαιροειδῆ εἶναι. Φιλίνος δὲ ξυστροειδῆ ὑπεροχὴν. Ἀσκατίων δὲ γωνίαν. Ζήνων δ' ὁ Ἡροφίλειος ὑπεροχὴν τῶν θυρῶν μανδάλω ὁμοίαν. Ἀπολλώνιος δ' ὁ πρεσ- 5
βύτερος ὑπεροχὴν στρογγύλην σφαῖρα ὁμοίαν. . . . ἡμεῖς δὲ τούτους πάντας παραιτησάμενοι Βακχεῖω συγκατα-
τιθέμεθα, ὅς ἐν τῷ τρίτῳ φησὶν ἄμβην καλεῖσθαι τὴν ὀφρυώδη ἐπανάστασιν.

1–5 *Erasistratus*, fr.72 *Garofalo* (p.84) 1–8 *Diocles*, fr.161 *van der Eijk* 7–8
ita quoque Galenus, *Ling. Hippocr. explic.* t.19 p.77.7 *Kühn*

3 Ἀσκατίων] Ἀσκληπιάδης *Garofalo* 5 σφαῖρα AH¹: σφαῖραν *HLMO* 6
τούτου A

alia fragmenta medica dubia

app. [Galenus], *Hist. phil.* 132 (DG p. 647.21–24 Diels 1879)
7
(spur.) Περὶ νόσων.

Διοκλῆς αἰτίας πλείστας τῶν νόσων δι' ἀνωμαλίαν γίνεσθαι τῶν ἐν τῷ σώματι στοιχείων καὶ τοῦ κατα-
στήματος ἀέρος. Στράτων διὰ πλῆθος τροφῆς γίνεσθαι τὰς νόσους.

1–5 *Aëtius*, 5.30.2–3 *Diels*, DG p.443.5–9 ([*Plutarchus*], *Plac.* 5.30, BT t.5.2.1, p.152.20–153.3 *Mau* 1971; cf. *etiam Runia* 1999, p.248.9–12); *Stobaeus*, *Ecl.*

and it is remarkable if men who were capable of considering everything however small overlooked a disease which is so great and difficult [to heal] and affects so many people. Only Strato the pupil of Erasistratus has given us ideas about the disease, calling it a bad [state of] the humours; for the book about the disease which is attributed to Democritus is clearly spurious.

app. Erotianus, *Collection of Hippocratic Expressions* 103 (p.23.8–12 et 6 21–23 Nachmanson 1918)

(dub.)

ambê. Strato the Erasistratean says that the *ambê* is a rounded lever. Philinus that it is a projection shaped like a scraper. Asclatation that it is an angle. Zeno the follower of Herophilus that it is a projection like the bolt-pin on doors. Apollonius the Elder¹ that it is a round projection like a sphere. . . . But asking all these to pardon us we agree with Bacchius, who in his third book says that a raised rim that is like a brow is called *ambê*.²

¹ Apollonius (100) in *RE*, also mentioned in **app. 3** above. Wellmann 1895, 149.

² The term *ambê* appears in Hippocrates, *On Joints* 7 and 80, in the former passage in the description of a piece of wood used in the reduction of a dislocated shoulder and having a projection on one side to engage with the head of the humerus, in the latter referring to a sort of rim on either side of a dislocated finger-joint; presumably the fact that the rim in the former passage was on one side only explains some of the interpretations offered.

Other dubious medical fragments

app. Pseudo-Galen, *History of Philosophy* 132 (DG p.647.21–24 Diels 7 1879)

(spur.)

On diseases.

Diocles [says] that most causes of diseases result from an imbalance of the elements in the body and of the air [due to] the weather. Strato [says] that diseases result from excess of nourishment.¹

¹ The same two reports appear, in different wording, in pseudo-Plutarch and

4.30–31, p.875.8–12 Hense); *Qusṭā ibn Lūqā* (Daiber 1980, p.246.23–248.1), cuius de textu tamen vide infra; Diocles, fr.51c van der Eijk

1 Περὶ νόσων *om.* B 4 τοῦ ἀέρος B “ἀέρος. Στράτων *ex nomine* Ἐρασίστρατος *nescio an a Galeno effectum sit*” Diels: ἀέρος *omittunt, et doctrinam sequentem expressam Erasistrato attribuunt, [Plutarchus] et Stobaeus: sed et ἀέρος et Ἐρασίστρατος legisse videtur Qusṭā ibn Lūqā, nisi verbo quod Luftmischung vertit Daiber solum καταστήματος, non καταστήματος ἀέρος reddidit: vide Daiber op. cit. 518, Runia op. cit. 249)*

app. Aetius Amidenus, Iatr. 2.3 (CMG t.8.1, p.154.17–156.21 Olivieri
8 1935)
(dub.)

καὶ ταῦτα μὲν ὁ Γαληνός. ὁ δὲ Στράτων οὕτως περὶ τῆς γῆς ἔφη.

Πρὸς χρονίαν κεφαλαγίαν. Γλοιὸν τὸν ἀπὸ τοῦ βαλανείου ἢ ἀπὸ τοῦ θερμοῦ ὕδατος μίξας τῇ πλυθείσῃ
 μελαίνῃ γῇ χρῶ ἢ ἀφεψήματι ρόδων κεφαλῶν φυράσας τὴν
 γῆν χρῶ, ἢ κεραμίου ὄξους ὄστρακον λεῖον προσπλέκων
 τῇ γῇ χρῶ σὺν ἀφεψήματι δάφνης, ἢ ὄστρακον κριβάνου
 λεῖον μετ’ ὄξους μίξας τῇ μελαίνῃ γῇ παραχέων σαμψύχου
 ἀπόζεμα χρῶ. πρὸς δὲ τὰ γιγνόμενα ἐπὶ τοῦ σώματος
 ψωρώδη καὶ λειχηνώδη ἐξανθήματα ἀφεψήματι ἀμυγ-
 δάλων ἢ θέρμων πικρῶν φυράσας γῆν μέλαιναν χρῶ,
 ἢ κεράμιον ἀπὸ ὄξους ἀποπλύνας ἀφεψήματι πηγάνου καὶ
 φυράσας τῇ γῇ ὁμοίως χρῶ, ἢ βωλάρια ἀλὸς τὰ εὐρι-
 σκόμενα ἐν τῷ πυθμένι τῶν ἀπὸ γάρου κεραμίων
 p.155 λεάνας καὶ φυράσας τῇ γῇ χρῶ, ὡς ἐνεργῶ, ἢ περιστερᾶς
 κόπρον μίξας τῇ γῇ καὶ ἀλικακάβου ἀφεψήματι φυράσας
 χρῶ.

5 ἀφέψημα ω 5–6 τῇ γῇ Dω 6 κεράμιον A'M ἀπὸ ὄξους DP 7 κριβάνου
 L^a: κλιβάνου M^aP^aP^aAψ: λιβάνου ω 8 μετ’ ὄξους L^a: *om. cett.* μίξας *om.* L^a
 9 γενόμενα A'R: γεν<v>όμενα M ἐπὶ *om.* ω 10 καὶ ψωρώδη A 10–11
 ἀμυγδάλων ἢ *om.* φω ἀμυγδάλων ἢ θέρμων πικρῶν] πικρῶν ἀμυγδάλων *tan-*
tum ADP 11 γῇ μελαίνῃ ω κέραμον A'M 12 ἀπὸ *om.* P^aAM^o ἀφέψημα
 ω 15 ἐνεργεῖ DP 16 καὶ] σὺν DP: ἢ Mo: *om.* φω ἀλικακάβων DP:
 ἀλικακάβατος A'M φυράσας *om.* P^aL^a

in Stobaeus, but in both the doctrine here attributed to Strato is attributed to Erasistratus, and “of the air” is absent from the end of the report of Diocles. As Diels suggested, it is highly probable that Galen’s “of the air. Strato” (*aëros. Straton*) is a corruption of “Erasistratus.” However, Qustā ibn Lūqā’s Arabic translation of pseudo-Plutarch appears to have both “of the air” and “Erasistratus,” unless “of the air” has been added in the Arabic in explanation of “weather” (literally in the Greek: “constitution [of the air]”).

app. Aëtius Amidenus, *Medicine* 2.3 (CMG vol.8.1, p.154.17–156.21
8 Olivieri 1935)
(dub.)

This is what Galen [said]. Strato spoke as follows about earth:¹

For chronic headache. Mix the oily sediment from the bath, or from hot water, with washed black earth: apply. Or mix the earth with water in which rose-heads have been boiled: apply. Or mix a ground potsherd from a vinegar-jar with the earth and apply with water in which bay-leaves (*Laurus nobilis* L.) have been boiled. Or mix a ground potsherd from a bread-crock with the black earth along with vinegar, and pouring in water in which marjoram (*Origanum majorana* L.) has been boiled, apply. For the scabby and lichenous eruptions that occur on the body mix black earth with water in which almonds (*Prunus dulcis* (Miller) D. Webb) or bitter lupines (*Lupinus albus* L.) have been boiled: apply. Or clean a vinegar-jar with water in which rue (*Ruta graeaeolens* L.) has been boiled, mix with the earth and apply in the same way. Or grind the little lumps of salt which are found in the bottom of jars that have been used for fish-sauce, and mix with the earth: apply
p.155 it as effective. Or mix the droppings of a dove with the earth, mix with water in which *halikakabos*² has been boiled: apply.

¹ It is unclear how much of what follows is taken from the Strato in question, whoever that might be. However, parallels with Galen do not resume until the next chapter in Aëtius, 2.4, so the whole of 2.3 has been included here. See further below, nn.4 and 8.

² Dalby 2003, 259 notes that this is a name for winter-cherry (*Physalis alkekengi* L.) but also for other, less edible plants. Of the references he gives, Galen, *Alim. fac.* 2.38 (vol.6 p.621.16 Kühn) presumably refers to winter-cherry (a rustic food, not nutritious and unpleasant to the taste), but Dioscorides, *De materia medica* 4.71, 72 and 74 notes that the name was used for plants like *strukhnos* (*Withania somnifera* (L.) Dunal) and *doruknion* (*Convolvulus oleaeifolius*).

Πρὸς δὲ βῆχα χρονίαν μετὰ καχεξίας ἀφεψήματι ὁστῶν
μοσχείων συμφυράσας τὴν γῆν χρίε τὸν θώρακα ἢ
κεράμιον ἀπὸ μέλιτος πλύνας ὁμοίως καὶ συμφυράσας χρῶ
ἢ ἀφεψήματι κυμίνου καὶ μελανθίου ὁμοίως χρῶ, ἢ
ἀφεψήματι σαμψύχου ὁμοίως φυράσας χρῶ.

Πρὸς σπληνικούς. σποδὸν κληματίνην καὶ θρόμβον
τρυγίας ὄξους φυράσας τῇ γῇ χρῶ, ἢ ἀφεψήματι φύλλων
καππάρεως φυράσας χρῶ, ἢ ὄστρακα καλλάϊνα μίξας τῇ γῇ
καὶ μετ' ὄξους φυράσας χρῶ.

Πρὸς ὕδρωπικούς. ὄστρακα ἀπὸ ἄλμης παλαιωθέντα
λεῖα μίξας τῷ πηλῷ χρῶ, ἢ σκωρίαν ἀργύρου λειοτάτην
ὁμοίως μίσγε τῷ πηλῷ καὶ χρῶ, ἢ ἀποζέματι σαραπιάδος
βοτάνης τῆς τριόρχεως φυράσας χρῶ, ἢ μοσχείων ἢ
χοιρείων κρεῶν γάρου μίσγων ὁμοίως χρῶ, ἢ σάμψυχον
θαλαττίῳ ὕδατι ἐψήσας φυράσας τὴν γῆν χρῶ, ἢ
ἀφεψήματι θερμῶν πικρῶν τάριχον συλλεάνας καὶ μίξας τῇ
γῇ χρῶ, ἢ στυπτηρίαν κεκαυμένην καὶ γλήχωνος
κεκαυμένου τέφραν μίξας τῷ πηλῷ καὶ ὀξυμέλιτι φυράσας
χρῶ, ἢ βόλβιτα βοὸς ξηρὰ λεῖα μίξας τῇ γῇ καὶ μετὰ
ὀξυμέλιτος φυράσας χρῶ.

Πρὸς ἰσχιάδα καὶ πάντας τοὺς περὶ τὰ νευρώδη μόρια
ψυγμούς. ἀφεψήματι ὁστέων μοσχείων σάμψυχον ἐψήσας
καὶ μίξας τῇ λευκῇ γῇ χρῶ, ἢ ἔγχελυν ἐψήσας μεθ' ἄλων
καὶ νίτρου τῷ ἀφεψήματι φυράσας τῇ γῇ χρῶ. ἢ γλοιὸν

18–22 *om. A* 19 μοσχίων *φDω* τῇ γῇ *φDM°ω* 20 φυράσας *ψω* 21
ἀφένημα (*pr.*) *ω* ὁμοίως *om. A'M* 21–22 ἢ ἀφεψήματι σαμψύχου *om.*
A 22 ἀφένημα (*alt.*) *ω* χρῶ ὁμοίως φυράσας *M°DP* 23 Πρὸς δὲ *M°P°A*
κληματίνην] χληματίδος *DP* 25 καλὰν *DM°*: καλὰ *P* 25–26 ἢ ὄστρακα –
χρῶ *om. P°Aω*: *post* χρῶ (30) *transpos. M°* 27 Πρὸς δὲ *M°P°A* παλαιωθέντα]
παλαιᾶς *Aψ* 28 λεῖα] λειώσας *ω*: *om. P°* τῷ πηλῷ] τῇ γῇ *Aψω* λειοτάτην
ἀργύρου *ω* 28–29 ἢ σκωρίαν – καὶ χρῶ *L°*: *post* χρῶ (26) *transpos. cett.* 29
ἀποζέματι] ἀφεψήματι *PM°*: ἀπόζεμα *ω* σεραπιάδος *P°Aψω* 30 βοτάνης
– χρῶ *M°*: *om. L°*: *post* χρῶ (26) *transpos. cett.* 31 μίσγων] σμίγων *ω*: μίξας
P°ADP: *om. M°* ὁμοίως *om. ψ* 32 καὶ φυράσας *ψP°AD* τῇ γῇ *P°P°ψω* 33
θερμίων *A* 35 τῷ πηλῷ] τῇ γῇ *ADP*: *om. M°* καὶ ὀξυμέλιτι φυράσας *om.*
φω 36 *post* τῇ γῇ *add. χρῶ ω* 36–37 ἢ βόλβιτα βοὸς – φυράσας χρῶ
om. A καὶ μετὰ ὀξυμέλιτος φυράσας *Olivieri*: μετὰ καὶ (*μετὰ καὶ om. M°*)
ὀξυμέλιτος (ὀξυμέλιτι *P°M°*) φυράσας *φP°L°M°*: μετὰ ὀξυμέλιτος φυράσας *P°*:
καὶ (*καὶ om. MUR*) φυράσας μετὰ ὀξυμέλιτος *ω*: καὶ ὀξυμέλιτι φυράσας *M°DP*
37 χρῶ *om. ω* *hoc glossema add. ω*: ἦγουν τοῦ ἄρρενος βοὸς τῷ κάμνοντι
τῆς δὲ θηλείας βοὸς τῇ καμνούσῃ θηλείᾳ 38 Πρὸς δὲ *M°P°A* ἰσχιαδικούς
Aψω 39 ψυγμούς] ἐψυγμένους (*sic*) *DP* 40 καὶ *om. L°AM°* μίξας τῇ *om.*
A 41 τὴν γῆν *M°ADP*

For chronic coughing accompanied by poor physical condition. Combine the earth with water in which calves' bones have been boiled, and anoint the chest. Or wash a jar that has been used for honey, combine [the earth with the water] in a similar way and apply. Or [combine the earth] in the same way with water in which cumin and love-in-a-mist (*Nigella damascena* L.)³ have been boiled, and apply. Or combine [the earth] in the same way with water in which marjoram has been boiled, and apply.

For those with illness of the spleen. Combine ash of vine twigs and a lump of vinegar-sediment with the earth, and apply. Or combine [the earth] with water in which leaves of the caper plant (*Capparis spinosa* L.) have been boiled, and apply. Or mix sherds of glazed pottery with the earth, combine with vinegar, and apply.

For those with dropsy. Mix with the clay old potsherds that have been used for brine, finely ground, and apply. Or mix very finely ground dross of silver with the clay in a similar way, and apply. Or combine [the clay] with water in which salep (that is, the herb *triorkhes*)⁴ has been boiled. Or mix a salt paste of calves' meat or pork and apply in the same way. Or boil marjoram in seawater, combine the earth with it, and apply. Or pound up a pickle with water in which bitter lupines have been boiled, mix with the earth and apply. Or mix burnt alum and ash of burnt pennyroyal (*Mentha pulegium* L.) with the clay, combine with honey and vinegar, and apply. Or mix finely ground dry cow-dung with the earth, combine with a mixture of honey and vinegar, and apply.

For sciatica and all agues in the sinewy parts. Boil marjoram in water in which ox-bones have been boiled, mix with the white earth, and apply. Or boil an eel with salt and soda, combine the earth with the boiled water, and apply. Or mix greasy sediment

³ See Dalby, *op. cit.* 109. I am grateful to Laurence Totelin for drawing my attention to the comments by Dalby in this and the previous note.

⁴ The text glosses one Greek name for the plant (which, like the term "salep," can denote a number of different species of orchid) by another.

μετὰ ἀσβέστου μίξας τῇ γῇ χρῶ, ἢ πράσου καὶ σκόρδων
 ἀφεψήματι φυράσας τῇ γῇ χρῶ, ἢ κόστον καὶ κασίαν
 σχοῖνον ἀσπάλαθον ξυλοβάλαμον καὶ σάμψυχον
 παρακεκομμένα ἔψε μεθ' ὕδρελαίου καὶ μίσγε τῷ πληῶ καὶ
 χρῶ, ἢ αἰγὸς σπυράθους καὶ βόλβιτα βοὸς ξηρὰ ἅμα
 λεάνας μετὰ γλοιοῦ σκευασθέντος ἐκ κηρωτῆς ῥαφανίνης
 μίσγε τῷ πληῶ καὶ χρῶ.

p.156 Πρὸς ποδάγραν. ἀπὸ κεφαλῆς μὲν μέχρι βουβώνων
 πηλούσθω τοῖς προκειμένοις, ἀπὸ βουβώνων δὲ καὶ κάτω
 μέχρι ὀνύχων τοῖς ὑπογεγραμμένοις· μόσχου τοὺς
 ὀπισθίους πόδας κατακαύσας σὺν τοῖς ὄνυξι καὶ λεάνας
 μίξας τῇ γῇ χρῶ καὶ λευκογραφίδα λεάνας μεθ' ὕδατος, ἐν
 ᾧ σίδηρος πλειστάκις ἐναποσβεσθῇ, καὶ στυπτηρίας Γ° α'
 καὶ συμφυράσας τῇ γῇ χρῶ, ἢ ἀφεψήσας κικίδας μέχρι
 τακερωθῶσι καὶ συμφυράσας τῷ ἀφεψήματι τὴν γῆν χρῶ ἢ
 ἀφεψήματι φύλλων τῆς κύπρου φυράσας τὴν γῆν χρῶ.
 ἄλλο. στυπτηρίας ὕγρᾶς Γ° α'· στυπτηρίας σχιστῆς Γ° α'·
 κόμμεως Γ° ς· ψιμμουθίου Γ° θ'· μελαντηρίας Γ° ε'· μίσυος Γ°
 ς· ἰτέας φύλλων Γ° θ'· ἐλαίου μυρσίνου ἢ κικίνου Γ° κδ'·
 ὄξους λίτρας ς· λεάνας ἅμα καὶ συμφυράσας τῇ γῇ χρῶ.
 ἄλλο. στυπτηρίας λιθαργύρου μίσυος ὀπτοῦ ἀνὰ < δ',
 κηρωτῇ μυρσίνῃ ὕγρᾳ ἀναλαβόν· καὶ φυράσας τῇ γῇ χρῶ.

42 τῇ γῇ μίξας φ πράσου] πράσ(σ)ων DM^x σκορόδων DP 43 τὴν γῆν
 M^eADPAⁱ 44 σχῖνον Pw καὶ om. DP 46 σπυράνθους U: σπυράνθας Aⁱ:
 σπυράνθαι M βοῶν ξηρὰ DP: ξηρὰ βοὸς M^eω 46–47 λεάνας ἅμα M^eω
 47 σκευασθέντα AⁱM ῥεφανίνης φA 49 Πρὸς δὲ M^eA ποδάγρας A 50
 πιλούσθω OM^eω 52–53 λεάνας καὶ μίξας OA 54 ἐναπεσβέσθη M^eAψω
 55 καὶ (alt.) om. ADM^eω 55–56 ἢ ἀφεψήσας—τὴν γῆν χρῶ om. M^eM^e 56
 καὶ om. P^eL^eOD φυράσας φψ τῷ ἀφεψήματι om. DP 56–57 τὴν γῆν τῷ
 ἀφεψήματι A ἢ ἀφεψήματι—τὴν γῆν χρῶ post τῇ γῇ χρῶ (55) transpos. M^eφω
 57 κυπέρου P^eP^eOAU: κύπριδος DP τῇ γῇ AM^e 58 στυπτηρίας ὕγρᾶς Γ°
 α' om. P^eP^ePw σχιστῆς om. L^eO 59 ς·] ita TLG CD-ROM “E”: ς· Olivieri
 (an typorum errore?) 60 φύλλων om. ω 61 λίτρας] ς^ε DP: Γ°AM^eM: στυ,
 superscr. γ, Aⁱ: ςθ R: ς, superscr. γ, U 62 λιθαργύρου] λίθου A

[from the bath], together with unslaked lime, with the earth, and apply. Or combine the earth with water in which leek (*Allium ampeloprasum* L.) and garlic (*Allium sativum* L.) have been boiled, and apply. Or boil chopped costus root (*Saussurea costus* [Falc.] Lipsch.) and cassia (*Cinnamomum aromaticum* Nees), lemon-grass, *aspalathos*, balsam-wood and marjoram together with a mixture of water and olive-oil, mix with the clay and apply. Or grind together goats' dung and dry ox-dung, together with gum made from salve of radish (*Raphanus sativus* L.), mix with the clay and apply.

p.156 For gout. From the head as far as the groin let him be plastered with the afore-mentioned, but from the groin downwards as far as the toe-nails with the the things set out below. Completely burn the back feet of a calf together with the hooves, grind up, mix with the earth and apply. And grind up white clay with water in which iron has been quenched very many times, and one ounce of alum,⁵ combine with the earth and apply. Or boil oak-galls until they are soft, combine the earth with the boiled water, and apply. Or combine the earth with water in which henna-leaves (*Lawsonia inermis* L.) have been boiled, and apply. Another:⁶ moist alum, 1 ounce.⁷ Cuttable alum, 1 ounce. Gum arabic, 6 ounces.⁸ White lead, 8 ounces. Shoemakers' black, 6 ounces. Copper ore, 6 ounces. Willow leaves, 8 ounces. Oil of myrtle or castor-oil, 24 ounces. Vinegar, 6 *litrai*.⁹ Grind together, combine with the earth, and apply. Another: alum, litharge, roasted copper ore, 4 drachms¹⁰ each, make up in a moist myrtle-salve, combine with

⁵ Aluminium potassium sulphate; but the Greek term can also denote ferrous sulphate. For "ounce" see nn.4 and 5 below.

⁶ The recipes that follow in the rest of the chapter are set out in a different style from those that have preceded. That they cannot in their present form derive from Strato of Lampsacus (or from Strato the pupil of Erasistratus, if he was a different person) is shown by the use of *Roman* measures (the ounce has indeed already appeared in line 52 above). See also below, n.8.

⁷ The Roman ounce was approximately 27 grams, slightly less than an English ounce.

⁸ The text on TLG CD-ROM E has the numeral for 6, but the printed text in CMG has the (not dissimilar) numeral for 90. The latter, as Laurence Totelin points out to me, is hardly plausible in the present context.

⁹ *litra* is the Greek form of the Roman *libra*, pound, which as a measure of weight was 12 Roman ounces, approximately 327 grams or 11.5 English ounces. It could also be used as a liquid measure, approximately half a pint.

¹⁰ The Greek weight, approximately 4 grams or 0.14 of an English ounce.

ἄλλο. ἀκακίας χαλκάνθου ἀνὰ < β' λεάνας, ὅξει ξήρανον
καὶ συμφυράσας τῷ πηλῷ χρῶ. ἄλλο. ψιμυθίου ⁶⁵
λιθαργύρου ἀνὰ < δ' ἐλαίου μυρσίνου λίτρας δ' ὕδατος τὸ
ἄρκουον συμφυράσας τῇ γῇ χρῶ. ἄλλο, ὃ ἐθεραπεύθη
ὁ ἑπαρχος Φιλίνος· μόρων χυλοῦ στυπτηρίας σχιστῆς
κυπέρου ἄγνου κικίδων κρόκου μυρίκης καρποῦ
λιβανωτοῦ ἀνὰ Γ' < ' ἅμα πάντα λειότατα ποιήσας ξηράνας ⁷⁰
ἀπόθου· ἐπὶ δὲ τῆς χρείας ἀνέσας ὕδατι καὶ συμφυράσας τῇ
γῇ χρῶ· μὴ λουούμενον δὲ δεῖ ἀπαντλεῖσθαι περσικῶν
ἁώρων ἀφεψήματι. καὶ περὶ μὲν τῆς γεωργουμένης γῆς
ἱκανὰ καὶ ταῦτα.

64 *post* ἀνὰ *add.* ου, *superscr.* ΓΓ', A'U 64–65 ἀκακίας – τῷ πηλῷ χρῶ *post*
τῇ γῇ χρῶ (61) *transpos.* M'ω: *om.* DAPM^o 66 <] ογγίας A δ' (*pr.*)] κδ'
MeP^xDPω: γ' AM^o λίτρας] δραχμὰς AD: *om.* MePω δ' (*alt.*)] λδ' M'Dω
67–74 ἄλλο, ὃ ἐθεραπεύθη – ἱκανὰ καὶ ταῦτα *om.* OM^o 68 Φίλῆνος A:
Φίλωνος P σχιστῆς] σχοίνου D: σχίνου P: *om.* ω 69 κύπρου ω μυρίκης]
μυρσίνης DP 70 ἀνὰ Γ' < ' *om.* φAψω (*sed non* U) λειότατα ποιήσας]
λειώσας καὶ DP ξηράνας *om.* A 72 λουούμενον δὲ] λυόμενης δὲ τῆς νόσου
DP καὶ περσικῶν DP

app. Philumenus, De venen. anim. 5.2 (CMG t.10.1.1 p.9.11 et 17–19
9a Wellmann 1908)
(dub.)

περὶ κυνοδήκτων καὶ ἀνθρωποδήκτων.
... ἐκ δὲ τοῦ Στράτωνος· ὅστέα μόσχεια καύσας, ἕως λευκὰ
γέννηται, ἀναλαμβάνει πίσην ὑγρᾶ ἢ μέλιτι ἢ ἀμφοτέροις
καὶ ἐντίθει. ἄλλο· μάννην λεάνας μετ' ἐλαίου καὶ οἶνου
κατάπλασσε.

5

2–5 Aëtius Amidenus 13.1 p.264.14–265.1 Zervos (*cols.* 759.20–760.2 Cornarius
1549), *Stratone non nominato*

3 μέλιτι ἐφθῶ Aëtius ἀμφοτέροις ἐπίσης Aëtius 4 ἐντίθει τῷ κόλπῳ Aëtius
μάννην ἢ αὐτὸν τὸν λίβανον μετὰ σύμνησης Aëtius

the earth and apply. Another: grind up 2 drachms each of acacia and gold-flower (*Helichrysum*), dry them with vinegar, combine with the clay and apply. Another: white lead, litharge (lead monoxide), 4 drachms each. myrtle-oil, 4 *litrai*. Sufficient water. Combine with the earth and apply. Another, with which the governor¹¹ Philinus was treated: mulberry-juice (*Morus nigra* L.), cuttable alum, *Cyperus*, chaste-tree (*Vitex agnus-castus* L.), oak-galls, saffron (*Crocus sativus* L.), fruit of the tamarisk, frankincense, 6 ounces each; grind them all up together very finely, dry, and store; when needed, dissolve in water, combine with the earth and apply. It is necessary, not having bathed, to draw off moisture with water in which unripe walnuts have been boiled. And concerning earth that has been cultivated, this much is sufficient.

¹¹ Or, if the reference is to a Roman official, “prefect” Vivian Nutton points out to me that a Roman official with a *Greek* name would indicate a late date.

app. Philumenus, *On Poisonous Animals* 5.2 (CMG vol.10.1.1 p.9.11
9a and 17–19 Wellmann 1908)
(dub.)

About those who have been bitten by dogs or by human beings.

From Strato: burn calf bones until they become white, make up with moist pitch or honey or both, and administer [by mouth]. Another: grind frankincense with olive oil and wine and apply as a plaster.¹

¹ A fuller version, not attributed to Strato, in Aëtius Amidenus 13.1. Only extracts from Aëtius book 13 have been published in Greek, by S. Zervos 1906; in what follows I have given references to Zervos for the passages he includes, and also throughout to the Latin version by Cornarius (1549 edition), available on-line (see the Bibliography). **Appendices 9–10** are assigned to Strato the Erasistratean by Kind 1931, 316–17, against Wellmann who had assigned only **Appendix 11** of the texts on poisons to Strato the Erasistratean, in his view in a lexicographical work (see **Appendix 6**), while attributing **Appendix 9–10** to Strato of Beirut (see below on **Appendix 13**), in the course of arguing that the Erasistratean did not write a specific work on poisons.

202 Strato of Lampsacus

app. Philumenus, De venen. anim. 20.3 (CMG t.10.1.1 p.26.27–27.2

9b Wellmann 1908)

(dub.)

p.27 βοηθοῦνται δὲ καὶ οὔτοι <τοῖς> ἐπ' ἐχεοδήκτων εἰρημένοι,
ὥς ἱστορεῖ Ἀπολλώνιος ἐν τοῖ Εὐπορίστοις, ἐν δὲ τοῖς
Στράτωνος οὐ κείται περὶ διψάδος.

1 *Aëtius Amidenus* 13.24 p.285.19–20 *Zervos* (col. 772.52–53 *Cornarius* 1549),
Stratone non nominato

1 τοῖς *add. Wellmann, exhib. Aëtius*

app. Philumenus, De venen. anim. 21.6 (CMG t.10.1.1 p.28.12–14

9c Wellmann 1908)

(dub.)

ἐκ δὲ τῶν Στράτωνος· ὥοῦ τὸ λευκὸν μετ' οἰνομέλιτος
δίδου πιεῖν, ἢ ῥεφάνου σπέρμα μετ' οἴνου. κατάπλασσε δὲ
ἀλὶ λείῳ ἀναληφθέντι πίσση ὑγρᾷ.

1 οἴνου μέλιτος *P*

app. Philumenus, De venen. anim. 23.4 (CMG t.10.1.1 p.30.7–9 Well-

9d mann 1908)

(dub.)

ἐκ δὲ τῶν Στράτωνος· χυλὸν ἀνδράχνης ὡς πλεῖστον δίδου
πιεῖν, ἢ μυρτίτην οἶνον ζωρότερον δίδου, ἢ ἀμπέλου
<ἔλικας> σὺν οἴνῳ <καὶ> ὄξει λειώσας δίδου πίνειν.

1–3 *Aëtius Amidenus* 13.26 (col.774.24–26 *Cornarius* 1549), *Stratone non nominato*

2 ἀμπέλου *Wellmann ex Aëtio*: ἀμπέλους *P* 3 ἔλικας *add. Wellmann ex Aëtio*
καὶ *add. Wellmann*

app. Philumenus, *On Poisonous Animals* 20.3 (CMG vol.10.1.1 p.26.7–
9b 27.2 Wellmann 1908)
(dub.)

These too [those who have been bitten by a *dipsas*]¹ are helped
by the [remedies] mentioned for those bitten by vipers, as is
p.27 recorded by Apollonius² in his *Easily Obtained Remedies*. But in
the [writings] of Strato there is no mention of the *dipsas*.

¹ A snake whose bite was said to cause extreme thirst. See Nicander, *Theriaca* 334–58; Lucan, *Civil War* 9.718, 737–60. Identified by Wick 2004, 299 as *Cerastes vipera* or *Pseudocerastes persicus*.

² Apollonius Mys (end of first century BC); Wellmann 1895, 149–50.

app. Philumenus, *On Poisonous Animals* 21.6 (CMG vol.10.1.1
9c p.28.12–14 Wellmann 1908)
(dub.)

From the [writings] of Strato: give to drink the white of an egg
with a mixture of wine and honey, or cabbage seed with wine.
Plaster it on with smooth salt made up in moist pitch.¹

¹ A remedy for those bitten by a *haimorrhous*, a serpent whose bite was said to cause blood to spout outwards all over the body; such effects can result from snakebite (Gow and Scholfield 1953, 175) even if the description at Lucan, *Civil War* 9.806–14 is exaggerated. See also id. 9.708–9; Nicander, *Theriaca* 282–319. The snake is identified as possibly *Echis carinata* by Gow and Scholfield loc. cit. and as *Echis carinatus* or *coloratus* by Wick 2004, 288.

app. Philumenus, *On Poisonous Animals* 23.4 (CMG vol.10.1.1
9d p.30.7–9 Wellmann 1908)
(dub.)

From the [writings] of Strato. Give as much juice of purslane to
drink as possible, or give wine flavoured with myrtle without
much water, or grind vine tendrils with wine and vinegar and
give to drink.¹

¹ A remedy for those bitten by a *seps*, a snake whose bite was believed to cause thirst. See Nicander, *Theriaca* 145–56; Lucan, *Civil War* 9.723, 763–88 (Lucan, because of the etymological connection with putrefaction, describes the snake rather as causing instant liquefaction of the flesh. Cf. Wick 2004, 279). Unidentifiable, Gow and Scholfield 173; *Echis pyramidum*, Wick 2004, 304.

app. Philumenus, *De venen. anim.* 37.3 (CMG t.10.1.1 p.40.7–13
9e Wellmann 1908)
(dub.)

κατ' ἰδίαν δὲ <δ> παραδίδωσιν ἡμῖν ὁ Στράτων ἐν τοῖς
αὐτοῦ συγγράμμασιν ἐστὶ τόδε· κατάπλασσε δέ, φησὶν
οὔτος, δάφνης φύλλοις λελεασμένοις, καὶ τὸ ἀφέψημα δὲ
τῆς δάφνης μετ' οἶνου δίδου πίνειν, ἢ ὁπὸν Κυρηναϊκὸν
μετ' οἶνου κεκραμένου δίδου πίνειν, ἢ σμύρνη ὁμοίως ⁵
χρηστέον, ἢ πέπερι μετὰ πηγάνου καὶ σμύρνης συλλεάνας
δίδου μετ' οἶνου ζωροτέρου, ἢ σίλφιον λεάνας μετ' οἶνου
ὁμοίως.

1–8 *Aëtius Amidenus* 13.37 (cols. 777.63–778.3 *Cornarius* 1549), *Stratone non nominato*

1 ὁ *add. Wellmann* παραδίδωσιν *Wellmann*: παράδοσιν *P* 3 λελεασμένοις
Oder: λελειασμένοις *P* 5 σμύρνη *Wellmann*: σμύρναν *P* 7 σίλφιον ἢ λάσαρ
Aëtius

app. Philumenus, *De venen. anim.* 33.3 et 6 (CMG t.10.1.1 p.36.17–20
10 et 37.12–13 Wellmann 1908)
(dub.)

Στράτων δέ — προιστορεῖ μὲν γὰρ τὰ προειρημένα περὶ τοῦ
ζώου καὶ τῶν ὑπὸ τούτου πληγέντων — ἔφη δέ, ὡς μᾶλλον
τὸ ζῶον περὶ τοὺς διδύμους ἐφάλλεται οὐ μόνον
6 ἀνθρώποις, ἀλλὰ καὶ παντὶ ζῴῳ. . . καὶ αὕτη δὲ ἡ δακοῦσα
μυγαλὴ ἀναπτυγεῖσα καὶ ἐπιτιθεμένη τῆς ἰδίας πληγῆς ⁵
ἀντιφάρμακόν ἐστι.

1–4 *Aelius Promotus*, *De venen. anim.* 30 (p.58.18–20 *Ihm*, ed. a. 1995), *Stratone nominato* 2–4 cf. *Aëtius Amidenus* 13.16 p.271.16–17 *Zervos* (13.14 col. 766.32–35 *Cornarius* 1549), *aliis verbis expressum* (*Stratone non nominato*, sed cf. *infra*) 4–5 *Paulus Aegineta*, *Epitome medica* 5.12.1, *Stratone non nominato* 4–6 [*Dioscorides*], *De iis, quae virus ejaculantur, animalibus libellus* 26 (t.2 p.84.11–12 *Sprengel* 1830) *Stratone non nominato*; *aliis verbis expressa haec inveniuntur apud Aëtium Amidenum*, 13.14 (col. 766.53–56) *Cornarii translationis, omittuntur tamen in textu quem edidit Zervos; vide quae ad translationem adnotavi. versio Cornarii sententiam Stratoni his verbis attribuit*: *Strato vero inquit: in muris aranei morsu locum scarificato, ac ipsum murem araneum ustum cum aceto cataplasmatibus vice imponito, aut sinapi tritum itidem ex aceto.*

1 προιστορεῖ *Wellmann*: προσιστορεῖ *P* 2 fort. ζώου <τούτου> *Wellmann* 3 ἐφάλλεται *ex Aelio Wellmann*: ἐνάλλεται *P* 4 ἀλλὰ καὶ ἄλλων ζώων *Aelius*: ἀλλὰ καὶ παντὸς ἄλλου ζώου *Aëtius* 5 ἀναπτυγεῖσα] ἀναπτυσσομένη [*Dioscorides*] *Paulus*

app. Philumenus, *On Poisonous Animals* 37.3 (CMG vol.10.1.1 p.40.7–
9e 13 Wellmann 1908)
(dub.)

The particular [remedy]¹ that Strato hands down to us in his writings is the following: make a plaster, he says, of ground bay leaves, and give the water in which bay has been boiled as a drink with wine, or give Cyrene juice² to drink with wine mixed with water, or use myrrh in a similar way, or grind pepper with rue and myrrh and give it with wine without much water, or grind silphium with wine in a similar way.

¹ A remedy for those stung by a sting-ray, *Trygon pastinaca* Cuv.

² I.e. silphium juice.

app. Philumenus, *On Poisonous Animals* 33.3 and 6 (CMG vol. 10.1.1
10 p.36.17–20 and 37.12–13 Wellmann 1908)
(dub.)

Strato — for he first narrates the aforementioned points about the creature¹ and those who have been bitten by it — said that the creature prefers to attack in the region of the testicles not
p.37 only human beings but every animal. . . . The shrew itself that has given the bite is also a remedy if it is cut open and placed on its own bite.²

¹ The shrew. On the attribution of this text see n. to **Appendix 9A**.

² The last sentence is given in a fuller form, and attributed to Strato, at the end of the relevant chapter of Aëtius Amidenus (13.14 Cornarius, 13.16 Zervos), in Cornarius' Latin version but not in the Greek text as edited by Zervos; Aëtius earlier in the chapter gives the same information about the testicles as in the first part of our passage, but does not name Strato there. Cornarius' version of the later passage is as follows: "Strato however says: where a shrew has bitten, scarify the place, and apply the shrew itself, roasted, with vinegar in the manner of a plaster, or ground mustard, likewise in vinegar." This is to be distinguished from a reference earlier in the chapter to using the shrew itself as a remedy by administering it in a drink, which is present in both Cornarius' version and Zervos' text (and in Aelius Promotus, p.59.3–4 Ihm), but is not attributed to Strato; the two ways of using the shrew itself are also distinguished, without reference to Strato, by Philumenus (the administering of the shrew in a drink appearing in 33.8) and by Paul of Aegina, *Medical Summary* 5.12.1. See also above, Introduction, at the end of §3.

app. Aelius Promotus, *De venen. anim.* 56 (p.69.5 et 11–13 Ihm, ed. a. 11 1995)

(dub.)

Περὶ ἐφημέρου . . . τὴν δὲ προσωνυμίαν ἔσχεν ἐκ τοῦ τῇ
πρώτῃ ἡμέρᾳ ἀναιρεῖν. ὁ μὲν οὖν Σωρανός, ὡς προεῖπον ἐν
τῷ περὶ τοῦ τοξικοῦ λόγῳ, λέγει εἶναι αὐτὸ σύνθετον· ὁ δὲ
Στράτων λέγει εἶναι βοτανήν.

2 προεῖπον *A Rohde*: προεῖπεν *V* 3 περὶ *A² in marg.*: πρὸ *VA*

app. Soranus, *Gynaec.* 4.36.12 (CMG t.4 p.149.27–150.3 Ilberg 12 1927)

(dub.)

p.150 μεμφόμεθα δὲ καὶ Στράτωνα σποδῷ δεδευμένη τὸν κόλπον
ἀναπληροῦντα, προσθέτω δὲ χρώμενον καστορίῳ· δριμυία
μὲν γὰρ ἡ σποδός, συμπληρωτικὸν δὲ τὸ καστόριον.

1 δεδευμένη *Emerinus*: δεδευμένον *P*

app. Alexander of Tralles, *Therapeutica* t.1 p.563.5–9 ed. Puschmann 13a 1878

(haud

nostri) Ἄλλο·

“Ἐτερον δ’, ὅπερ κεῖται ἐν τῷ τρίτῳ Στράτωνος, τοῦτο·
κύνα ἐφ’ ἡμέρας ἰδ’ ἐγκλείσας ὅσῃ μόνον παράβαλε αὐτῷ
φαγεῖν. τῇ δὲ πεντεκαιδεκάτῃ ἡμέρᾳ ἐκ τῆς λευκῆς τοῦ
κυνὸς ἀφόδου καύσας ἀνὰ κοχλιάρια δύο πότιζε ἐφ’
ἡμέρας ε’.”⁵

2 ὅπερ κεῖται] ὁ παρακεῖται *Mf* 3 μόνα *Paris. 2203 M* παραλαβὼν *M*:
παραλαβεῖν *Paris. 2203* αὐτὸν *Paris. 2203 M* 5 κοχλιαρίων *Paris. 2200*
2201 2202 *C L*

app. Aelius Promotus, *On Poisonous Animals* 56 (p.69.5 and 11–13
11 Ihm, ed. 1995)

(dub.)

About the [one-]day [poison] . . . it got its name from its causing death on the first day. Soranus, as I said previously in the account of the arrow-[poison],¹ says that it is a compound, but Strato says that it is a herb.

¹ Rohde argues that these words are to be taken with the preceding “I said,” as here, rather than with the following “says.” — See note to **Appendix 9A**.

app. Soranus, *Gynaecology* 4.36.12 (CMG vol.4 p.149.27–150.3 Ilberg
12 1927)

(dub.)

p.150 We also criticise Strato who fills the vagina with moistened ash, using the secretion of the beaver as a pessary;¹ for the ash is acrid, and the beaver-secretion causes congestion.

¹ As a treatment for prolapse of the womb. Although the Strato mentioned here is not explicitly identified as “Strato the follower of Erasistratus,” the parallel with **Appendix 2** above in both source and subject-matter suggests that it is he who is referred to.

app. Alexander of Tralles, *Therapeutics* vol.1 p.563.5–9 ed. Puschmann
13a 1878

(haud

nostris) Another [treatment for epilepsy]:

Another, which is found in the third book of Strato,¹ is this: shut a dog up for fourteen days and give it only bones to eat, and on the fifteenth day burn the dog’s white excrement and give two spoonfuls a day to drink for five days.

¹ Wellmann 1892, 675, attributed this and the following two texts to Strato of Beirut (Straton [20] in *RE*, mentioned by Galen, *Comp. med. secundum locos* 4.8, vol.12 p.749.3–5 Kühn and dated to the mid-1st century AD because of the reference to Moschion in **13C**; however, see the note there); he argues that the references to amulets hardly suit a follower of Erasistratus. Similarly Kind 1931, 317. See note to **Appendix 9**. As Laurence Totelin emphasises to me, the recipes in **Appendix 13** are quite different in kind from those in **Appendix 9**, which supports Kind’s attribution of the latter to Strato the Erasistratean (Straton [19] in *RE*). There seems no doubt that the texts in **Appendix 13** are later in date; as Dr Totelin points out, this is supported by the references to Orpheus and the mysteries in **13B** and to Moschion in **13C**. (Zeller 1879, 903–4 n.3 suggested that the Strato of Beirut referred to by Galen was identical

app. Alexander of Tralles, *Therapeutica* t.1 p.565.11–15 ed. Puschmann

13b 1878

(haud

nostri) Ἐκ τῶν παρακειμένων ἐν τοῖς Στράτωνος, λέγει δ' Ὀρφέως εἶναι.

Στρώχον ρίζαν ἀνελόμενος φθινούσης σελήνης κόψον καὶ δίδου πιεῖν ἐξ αὐτῆς, τὴν μὲν πρώτην ἡμέραν μίαν δόσιν, εἴτα β', εἴτα γ', εἴτα δ', καὶ οὕτως ἐφεξῆς, μέχρις ἂν 5 πεντεκαίδεκα ἀναλώσης δόσεις. μυστηριῶδες δέ ἐστι καὶ ὑπὸ πολλῶν θαυμάζεται.

1 ἐν τοῖς] ἐκ τῶν *Mf*: ἐκ τοῦ *Paris*. 2203 *M* 4 ἡμέρα *Mf* 5 β' etc.] τῇ δευτέρᾳ etc. *F* ἐφεξῆς περὶ τὰς διπλασίους μέχρις *Paris*. 2203 *L M Mf lat*.

app. Alexander of Tralles, *Therapeutica* t.1 p.571.3–9 ed. Puschmann

13c 1878

(haud

nostri) Ἐτερον πρὸς τὸ αὐτὸ, ὅπερ κεῖται ἐν τῷ Στράτωνος, λέγεται δὲ Μοσχίωνος τοῦ Σύρου.

Ὀνου τὸ μετώπιον δέρματι περιεπτόμενον καὶ φορούμενον ἀπαλλάσσει. ἥλον ἐκ πλοίου ναυαγήσαντος ἐλάσας ποιήσον βραχιόλιον πλατὺ, ὥστε ἐνθεῖναι ὅστουν 5 ἀπὸ καρδίας ἐλάφου, καὶ περίθεσ ἐν τῷ εὐωνύμῳ βραχίονι. ἐκκαρδιώσας δὲ τὴν ἔλαφον ζῶσαν καὶ ἀναπτύξας τὴν καρδίαν ἀνυπερθέτως παραχρῆμα καλάμῳ εὐρήσεις ὥς σάρκιον πεπηγὸς ὀστάριον, εἴτα ξήρανον καὶ βαλὼν ποίει, ὥς προεῖρηται, καὶ θαυμάσεις. 10

1–2 ἄλλο ἐκ τοῦ Στράτωνος *tantum Paris*. 2203 *M* 2 τοῦ Σύρου *L Mf*: *om.* Puschmann, *approbat Zipser* 4 ἀπαλλάσσει. ἄλλο. ἥλον *Paris*. 2203 *M* 6 περίθεσ] περιδίησον *Paris*. 2202 8 εὐρήσεις] εὐρίσκες *Paris*. 2200 2201: εὐρίσκες *Paris*. 2203 *L M*

with Strato the Erasistratean; in that case he is unlikely to be the source of the texts in 13.)

app. Alexander of Tralles, *Therapeutics* vol.1 p.565.11–15 ed.
13b Puschmann 1878
(haud nostri) From the [remedies] to be found in the [writings] of Strato: he says it is from Orpheus.¹

Take a root of thorn-apple when the moon is waning, cut it, and give to drink from it, on the first day one dose, then two, then three, then four, and so on in sequence, until you have used up fifteen doses. [This] is mystic² and many people are amazed at it.

¹ Another remedy for epilepsy.

² Presumably at least in part because of the arithmetical observation, in Pythagorean style, that $15 = 1 + 2 + 3 + 4 + 5$. “and so on in sequence” is slightly exaggerated, when only one step in the sequence — the last — has not already been made explicit.

app. Alexander of Tralles, *Therapeutics* vol.1 p.571.3–9 ed. Puschmann
13c 1878
(haud nostri) Another for the same,¹ which is found in the [work] of Strato, but is said to be from Moschion the Syrian.²

The forehead of a donkey, bound to the skin and worn there, will remove [the disease]. [Another remedy]:³ Hammer in a nail from a shipwrecked ship and make a wide bracelet, so as to put in it a bone from the heart of a stag, and put it round the left arm. When you remove the living heart of the stag and open it out immediately with a reed you will find a little bone like a piece of flesh which has set hard; then dry it and putting it in do as has been said, and you will be amazed.

¹ I.e. epilepsy.

² This is regarded by the TLG CD-ROM E, following Wellmann 1892, 675, as a fragment of the doctor Moschion who lived in the latter part of the first century BC and/or the first part of the first century AD, according to Deichgräber 1933; but Deichgräber does not mention this text, and it does not seem in character with the other evidence for Moschion's works. Wellmann 1892, 675 understands Alexander as saying that he found the recipe attributed to Moschion *by Strato*, and therefore uses this passage to argue that the Strato in question was later than Moschion. “The Syrian,” omitted by Puschmann, is in fact well attested in terms of the structure of the MSS tradition; I am grateful to Barbara Zipser for pointing this out.

³ “Another” is actually added in MSS Paris. 2203 and M, but can in any case be understood, as in Puschmann's translation.

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Stoa (Painted Stoa in Athens) **2**

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Sur deux passages difficiles de la *Vie de Straton* de Diogène Laërce

Tiziano Dorandi

La *Vie de Straton* vient immédiatement après celle de Théophraste dans le livre cinq des *Vies des philosophes* de Diogène Laërce (5.58–64), consacré à Aristote et aux Péripatéticiens qui lui succédèrent dans la direction de l'école (Théophraste, Straton, Lycon, Démétrios de Phalère), y compris Héraclide le Pontique. Après avoir donné quelques renseignements sur la personne de Straton, homme de grande réputation, surnommé le Physicien (φυσικός), sur son séjour à Alexandrie où il avait été le précepteur de Ptolémée II Philadelphe, et sur la durée de sa direction du *Peripatos* (dix-huit ans selon la *Chronologie* d'Apollodore d'Athènes: 5.58), Diogène transmet le catalogue des œuvres du philosophe, aujourd'hui perdues dans leur intégralité (5.59–60). L'épigramme funéraire du même Diogène pour Straton ainsi qu'une liste d'homonymes suit (5.61). La brève biographie est complétée par le testament de Straton (5.61–62) que Diogène déclare avoir récupéré dans la collection du péripatéticien Ariston de Céos,¹ et par un éloge du philosophe.

¹ Ariston fr. 16 SFOD. On suppose qu'Ariston a été la source (probablement indirecte) de Diogène pour les autres testaments des Péripatéticiens. Voir Sollenberger (1992) 3859–76 et J. Bollansée dans les notes à Hermippe *FGrHist* 1026 F 28 (304–5).

Il n'entre pas dans mes intentions de revenir sur la structure de la biographie laërtienne de Straton, ou sur le catalogue de ses écrits, ou sur son testament, sujets qui ont tous été bien étudiés par Sollenberger et sur lesquels on peut éventuellement apporter ici et là quelques précisions.² Je voudrais, pour ma part, m'occuper brièvement de deux passages qui présentent encore des problèmes en ce qui concerne l'établissement du texte et son interprétation. Mes remarques trouvent leur origine dans mon édition des *Vies des philosophes* de Diogène Laërce, et ont pour fin d'aider le lecteur de la *Vie de Straton* de Diogène Laërce telle qu'elle est publiée dans le recueil de R. W. Sharples qui précède (fr. 1), en s'inspirant du texte que je viens d'établir.³

Je commencerai par indiquer les sigles des manuscrits de Diogène Laërce tels que je les utilise dans les pages qui suivent: **B** = Neapolitanus gr. III B 29 (XII^e siècle); **P** = Parisinus gr. 1759 (XI^e/XII^e siècle); **F** = Laurentianus 69.13 (XIII^e siècle); **Φ/Φh** = Vaticanus gr. 96 (XII^e siècle). Pour une liste complète des manuscrits ainsi que pour une histoire du texte et pour les rapports entre les témoins, je me limiterai à renvoyer à mes *Laertiana*, dont les résultats sont résumés dans la préface à mon édition.⁴

Venons-en maintenant à l'analyse de deux passages controversés.

Une prémisses est nécessaire. Il y a quelques années, j'ai mis en évidence certaines caractéristiques du manuscrit **B** sur lesquelles on n'avait pas attiré l'attention.⁵ Un examen détaillé de ce manuscrit a décelé des éléments nouveaux qui apportent non seulement une preuve supplémentaire de la supériorité de **B** sur les autres témoins des *Vies*, mais aussi des données utiles pour comprendre la structure de l'œuvre de Diogène Laërce et certains de ses procédés de composition. Un de ces résultats s'applique au premier des deux passages que j'ai choisis.

Après avoir étudié les *inscriptions* et des *subscriptions* des dix livres des *Vies*, j'en ai déduit que Diogène n'avait pas donné de titre de rappel à chaque livre; la transition d'un livre à l'autre était signalée grâce aux phrases programmatiques, comme, par exemple, celle qui se trouve à la fin du deuxième livre (2.144) καὶ οὗτοι μὲν οἱ Σωκρατικοὶ καὶ οἱ ἀπ' αὐτῶν μετιτέον δὲ ἐπὶ Πλάτωνα τὸν τῆς Ἀκαδημίας κατάρξαντα καὶ τοὺς ἀπ' αὐτοῦ, ὅποσοι γεγόνασιν ἐλλόγιμοι, ou celle située entre les quatrième

² Voir Sollenberger (1992) et les notes à la traduction de Narcy (1999) 618–25.

³ Dorandi (2010).

⁴ Dorandi (2009).

⁵ Dorandi (2002) 15–19. J'en ai repropoé les résultats avec quelques retouches et mises à jour dans Dorandi (2009) 60–62.

et cinquième livres (4.67) ἡμεῖς δὲ τοὺς Ἀκαδημαϊκοὺς τοὺς ἀπὸ Πλάτωνος διεληλυθότες ἔλθωμεν ἐπὶ τοὺς ἀπὸ Πλάτωνος Περιπατητικούς, ὧν ἤρξεν Ἀριστοτέλης.

Ce que je viens de dire à propos de la succession des livres de Diogène porte à se demander si les titres de chaque biographie à l'intérieur des *Vies* remontent eux aussi à l'auteur lui-même. Celui qui lit les éditions modernes de Diogène Laërce est porté à donner une réponse affirmative à la question. Si l'on revient cependant aux manuscrits les plus anciens, la situation est tout à fait différente, et en parfaite cohérence avec celle que je viens de relever pour les titres des livres. On ne trouve pas de titre des biographies dans les trois manuscrits **BPF**, au moins dans leur état primitif; cela signifie que les titres manquaient dans le modèle, non seulement de ces trois témoins, mais aussi dans la rédaction originale du texte de Diogène. Les titres ont été ajoutés d'une façon systématique pour la première fois, dans **P**, par des mains postérieures de correcteurs surtout **P^x** et parfois **P⁴** (premières décennies du XIV^e siècle), dans des espaces blancs ou dans les marges. **F** en conserve quelques-uns de la main de **F²** (fin du XIII^e siècle) et de **F³** (fin du XVI^e siècle). En ce qui concerne **B**, dans quatre cas, des titres ont été ajoutés de la main de **B²** (XII^e siècle); dans deux autres cas ils sont de la main d'un correcteur inconnu. Je n'ai pas pris en compte le cas de **Φ** parce que ce manuscrit conserve des extraits, et on peut donc supposer avec vraisemblance que les titres qu'on trouve en tête de chaque section doxographique et de chaque biographie ont été ajoutés par l'anonyme qui a réuni ce recueil ou par le copiste de **Φ**.

Une relecture des *Vies* dans leur succession confirme enfin que l'absence des titres n'est pas à imputer à un vice de la transmission, mais qu'elle remonte à Diogène lui-même. Le biographe n'avait pas, en effet, besoin de signaler, à chaque fois, en tête des vies, le nom du philosophe dont il s'apprêtait à décrire les événements biographiques et à en résumer la doctrine. Pour passer d'une biographie à l'autre, il remplaçait le titre par des expressions idiomatiques (λεκτέον/ῥητέον περὶ τοῦ δεῖνα) ou par des formules plus articulées (voir, par exemple, 1.21, 6.19, 8.50); le plus souvent, il mettait tout simplement le nom du philosophe objet de la biographie au tout début du chapitre qui lui était consacré.

Arrêtons-nous maintenant sur le premier passage de la *Vie de Straton* que j'ai choisi.

Diog. Laert. 5.57–58

Dans les éditions modernes de Diogène, la *Vie de Théophraste* s'achève par ces mots:

Ἀκοῦσαι δ' αὐτοῦ (sc. Θεοφράστου) καὶ Ἐρασίστρατον τὸν ἱατρὸν εἰσιν οἱ λέγουσι· καὶ εἰκός.

La *Vie de Straton* suit immédiatement:

ΣΤΡΑΤΩΝ

Διεδέξατο δ' αὐτοῦ (αὐτόν **BP**) τὴν σχολὴν Στράτων Ἀρκεσιλάου, Λαμψακηνός, οὗ καὶ ἐν ταῖς διαθήκαις ἐμνημόνευσεν.

Sollenberger⁶ avait suggéré que la phrase διεδέξατο δ' αὐτοῦ τὴν σχολὴν Στράτων ne faisait pas partie de la *Vie de Straton*, mais de celle de Théophraste qui la précède immédiatement, comme dans les manuscrits **BP**. Il proposait donc d'éditer ce texte de la façon suivante:

Ἀκοῦσαι δ' αὐτοῦ καὶ Ἐρασίστρατον τὸν ἱατρὸν εἰσιν οἱ λέγουσι· καὶ εἰκός. Διεδέξατο δ' αὐτοῦ τὴν σχολὴν Στράτων.

ΣΤΡΑΤΩΝ

<Στράτων> Ἀρκεσιλάου, Λαμψακηνός, οὗ καὶ ἐν ταῖς διαθήκαις ἐμνημόνευσεν.

Le nom de Στράτων au début de la *Vie* serait tombé accidentellement par haplographie. Ce que je viens de mettre en évidence sur l'absence du nom des philosophes au début des biographies confirme, d'un côté, la lecture de Sollenberger et permet, de l'autre, de garder le texte transmis par les manuscrits les plus anciens:

Ἀκοῦσαι δ' αὐτοῦ (sc. Θεοφράστου) καὶ Ἐρασίστρατον τὸν ἱατρὸν εἰσιν οἱ λέγουσι· καὶ εἰκός. διεδέξατο δ' αὐτοῦ τὴν σχολὴν Στράτων Ἀρκεσιλάου, Λαμψακηνός, οὗ καὶ ἐν ταῖς διαθήκαις ἐμνημόνευσεν κτλ.

“Par ailleurs, il y a des gens qui disent que le médecin Érasistrate fut aussi son (de Théophraste) auditeur; et c'est vraisemblable. Son successeur, en ce qui concerne l'école, fut Straton, fils d'Arcésilas, originaire de Lampsaque, dont il fit mention dans son testament.”⁷

Pour l'αὐτοῦ de F, je peux renvoyer à Diog. Laert. 4.21: (Κράτης) διεδέξατο τὴν σχολὴν αὐτοῦ (sc. Πολέμωνος).⁸

⁶ Sollenberger (1987) 228–30.

⁷ Ici et ailleurs, pour le passage du livre cinq de Diogène Laërce, je cite la traduction de Nancy (1999), éventuellement retouchée dans quelques détails. Pour Érasistrate auditeur de Théophraste, voir Glucker (1998) 309–10.

⁸ Selon Nancy (1999) 618 n.1, si l'on accepte l'explication de Sollenberger, la phrase

La biographie de Straton s'enchaîne directement à celle de Théophraste comme, quelques paragraphes plus loin (5.65), la *Vie* de Lycon à celle de Straton: τοῦτον (sc. Στράτωνα) διεδέξατο Λύκων Ἀστυνάκτος Τρωαδεύς κτλ.

Le deuxième passage que j'ai choisi est le suivant:

Diog. Laert. 5.60

Pour célébrer la mort de Straton, Diogène Laërce lui dédie un bref poème en deux distiques à la structure métrique recherchée (chaque distique se compose d'un hexamètre et d'un dimètre iambique acataleptique). Pour la reconstruction de ce texte, l'éditeur trouve une aide supplémentaire, en plus des manuscrits des *Vies* de Diogène, dans celui de l'*Anthologie Palatine* (Palatinus Heidelbergensis gr. 23+Parisinus Supplément gr. 384, X^e siècle), qui transmet elle aussi l'épigramme (AP 7.111). Je reproduis le texte de mon édition.

τοῦτόν φασιν οὕτω γενέσθαι λεπτόν ὡς ἀναισθήτως τελευτῆσαι. καὶ	
ἔστιν ἡμῶν εἰς αὐτόν οὕτως ἔχον·	
Λεπτός ἀνὴρ δέμας ἦν †εἰ μὴ προσέχῃς ἀποχρησμοῖς†	1
Στράτωνα τοῦτόν φημί σοι	2
Λάμψακος ὃν ποτ' ἔφυσεν· αἰεὶ δὲ νόσοισι παλαίων	3
θνήσκει λαθὼν, οὐδ' ᾔσθετο.	4

“On dit qu'il (Straton) devint si mince qu'il ne se sentit pas mourir. Et voici ce que nous lui avons dédié:

C'était un homme au corps mince †...† / Je te parle de ce Straton que Lampsaque un jour engendra; toujours luttant contre les maladies, / il meurt sans qu'on le sache et sans le sentir lui-même.”

Le premier distique de l'épigramme est irrémédiablement corrompu.⁹ B présente une lacune, partiellement comblée par B² (à partir de Στράτωνα); la leçon de P, avant correction (εἰ μὴ προσέχῃς ἀποχρησμοῖς), n'a pas de signification; on peut expliquer celles de F (εἰμὶ προσεχρίσατο χρῆσμοῖς) et P⁴ (εἰμὶ προσεχρήσατο χρῆσμοῖς) ainsi que celle de l'*Anthologie Palatine*, après correction (εἰ μὴ προσέχῃς, ἀπόχρη μοι), comme des tentatives

d'ouverture se voit privée “de toute indication du sujet de la proposition relative qui lui appartient, dont il [Théophraste, bien sûr] fit mention aussi dans son testament, alors que ce sujet est indiqué sans difficulté, dans le texte traditionnellement édité, par le pronom αὐτόν (αὐτοῦ F), complément de διεδέξατο ('lui succéda'). Cette observation est de nature à affaiblir l'hypothèse de Sollenberger.”

⁹ Comme l'avait déjà remarqué Gercke (1902) 422–24.

conjecturales de rétablir un texte lisible. Ménage à partir du texte de **P**⁴, suggérait de corriger χρησιμοῖς en χραίσμαις (un substantif attesté par Nicandre, *Ther.* 583 et, au pluriel, 852). Cette conjecture est reproposée de manière indépendante, à ce qu'il semble, par Michel Patillon, qui traduit: "bien qu'il y remédiât à force de remèdes!"¹⁰ La conjecture de F. Jacobs εἴ μοι προσέχης (οὐ προσέχεις), ἀπὸ χρησμών (οὐ χρησμοῦ)¹¹ (acceptée par Cobet dans la forme: εἴ μοι προσέχεις, ἀπὸ χρησμών) n'avait pas convaincu G. Hermann,¹² qui proposait ἢ μὴ προσεχῆς· ἀπόχρη μοι, et qui traduisait ainsi le vers entier: "der Mann war schwächlich, oder gab nicht Acht: das ist mir genug." La meilleure correction est, à mon avis, celle de H. Stadtmüller,¹³ qui suggère εἰ μὴ προσέχης, ἀπόχρη μοι· | Στράτωνα τοῦτ' οὖν φημί γε et qui traduit "num attendas dicta mea, nil mea refert; certe de Stratone illud assevero." A la li. 3, Λάμψακος ὃν est une correction de Ménage (λαμψακηνὸν ὃν **P**¹, **B**²: τὸν λαμψακηνὸν ὃν **F**: λαμψακινόν· λαμψακὸς ὃν Pal.), qui avait détecté en Λαμψακηνόν une interpolation.¹⁴

Voilà pour ce qui concerne l'établissement du texte. Quant à son interprétation, je voudrais seulement m'arrêter sur l'adjectif λεπτός (1). Dans son édition des fragments de Philitas de Cos, Spanoudakis¹⁵ émet l'hypothèse captivante que, dans la λεπτότης qu'on attribue à Philitas, il n'y aurait aucune allusion à ses idées esthétiques; il ne s'agirait que d'une moquerie au sujet de la minceur excessive de Philitas, moquerie dont les origines remonteraient à un auteur comique. Je pense qu'il ne serait pas intéressant de mettre en relation le *topos* de la λεπτότης de Straton avec celle du poète et érudit Philitas, qui avait partagé avec notre philosophe (5.58 ἀλλὰ καὶ καθηγήσατο Πτολεμαίου τοῦ Φιλαδέλφου καὶ ἔλαβε, φασί, παρ' αὐτοῦ τάλαντα ὀγδοήκοντα) la charge de précepteur du futur Ptolémée II Philadelphus (né à Cos en 308, il régna sur l'Égypte du début de l'année 282 au 27 ou 28 janvier 246).¹⁶

¹⁰ M. Patillon ap. Nancy (1999) 623 n.1.

¹¹ Jacobs (1817) III 242.

¹² Hermann (1829) 236.

¹³ Stadtmüller (1899) 75.

¹⁴ Voir Dorandi (2009) 53, 166, 170.

¹⁵ Spanoudakis (2002) 54–55.

¹⁶ Voir Ameling (2001) 534–36 et Spanoudakis (2002) 26–28.

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La physique de Straton de Lampsaque

Dans la lignée de Georges Rodier

Pierre Pellegrin

Georges Rodier contre les Anciens

En France, les études sur Straton de Lampsaque sont encore dominées par le petit ouvrage (135 pages) de Georges Rodier, *La Physique de Straton de Lampsaque*, publié chez Félix Alcan en 1890 (la couverture extérieure porte 1891). C'est d'ailleurs, largement, une domination faite de concurrent. La thèse centrale de l'ouvrage de Rodier, c'est que la physique de Straton est la conséquence nécessaire de l'action de son époque sur l'Aristotélisme. "La physique de Straton, si différente qu'elle soit de celle d'Aristote, en est, à un certain point de vue, la conséquence" (124). La philosophie de Straton, dont la partie essentielle est la physique — Polybe et Diogène Laërce rapportent que Straton était surnommé "le physicien" —, résulterait donc d'une sorte de travail critique sur l'Aristotélisme. Ainsi Straton pourrait peut-être être considéré comme le premier qui a pensé l'Aristotélisme en termes de tension entre une tendance métaphysique et une tendance empiriste, une conception promise à une grande fortune, par exemple sous la forme, imaginée par Theodor Gomperz, d'une opposition, à l'intérieur même de la pensée d'Aristote, entre "l'Asclépiade" et "le Platonicien." Sans

doute faut-il lutter contre cette vision un peu simpliste de l'Aristotélisme, mais, si Rodier a raison, cela lui donnerait au moins un enracinement historique très fort. Rodier estime que l'ouvrage dans lequel Aristote et Straton sont le plus près l'un de l'autre est les *Météorologiques*, qui est sans doute le moins "métaphysique" des traités du *corpus* aristotélicien, et nous verrons que cette remarque est lourde de sens. Or le III^e siècle avant J.-C. se caractérise par des progrès importants en mathématiques et dans ce qu'Aristote appelle "les parties les plus physiques des mathématiques" — c'est-à-dire l'optique, l'acoustique et la mécanique — et en médecine avec l'activité des écoles alexandrines d'Hérophile et d'Érasistrate et la fondation de la secte empirique. Rodier note que l'optique, l'harmonique et la mécanique deviennent indépendantes de la physique générale (120). Ces progrès ont été faits notamment à Alexandrie où Straton a été le précepteur de Ptolémée Philadelphe.

Rodier repère deux directions dans l'entreprise de Straton. D'abord, Straton infléchit la physique d'Aristote, dont il conserve le cadre conceptuel, en un sens que Rodier juge plus proche de la science moderne. Rodier mentionne au moins deux points à l'appui de cette description: Straton aurait pris l'expérience "non plus comme moyen de vérification, mais comme point de départ" (128) et, en montrant que tous les corps sont pesants et forment un système unique, "il a entrevu le principe de l'uniformité des lois de la nature, dont la science moderne confirme de jour en jour l'exactitude" (ibid.). On ne peut s'empêcher de voir dans cette approche de Rodier la trace de positions, que l'on dit "positivistes," dominantes à son époque dans le domaine de la philosophie des sciences. Si l'on entendait faire une critique radicale d'une telle approche, on pourrait tout simplement se demander si l'idée d'une inflexion de la physique aristotélicienne vers la scientificité, c'est-à-dire l'idée d'une physique aristotélicienne qui pourrait être plus ou moins scientifique, a un sens. J'ai moi-même tenté de montrer que la physique d'Aristote est bel et bien intervenue, au cours de l'histoire, dans des débats *scientifiques* au sens moderne du terme et que, par certains de ses aspects, elle appartient à l'histoire de la physique telle que nous l'entendons aujourd'hui.¹ Mais il s'agit là d'une analyse dont les fondements sont très différents de ceux sur lesquels s'appuie Rodier qui, dans la tradition continuiste très vivace de son temps et encore très bien représentée aujourd'hui, offre l'image d'une physique d'Aristote se rapprochant de la physique moderne par adjonctions successives d'analyses positives, dont celles de Straton constitueraient un exemple remarquable, et par élimination de scories présocratiques. D'une manière générale, les

¹ Cf. Pellegrin, 2000, 9-64.

commentateurs contaminés par cette tradition à la fois positiviste et continuiste insistent sur le côté *expérimental* des recherches de Straton, alors que les textes sont loin de conforter cette lecture.²

La seconde direction indiquée par Rodier, c'est que Straton essaye de bâtir la philosophie qui correspond au nouvel état des sciences. Il faut assurément louer Rodier d'avoir résisté à la tentation de faire de Straton un savant. Il reconnaît bien que Straton n'a pas eu de vrai rôle scientifique et il a raison de dire, contrairement à d'autres comme B. Gille, qu'il n'a même pas eu, quand il était à Alexandrie, le rôle d'un véritable incitateur aux recherches scientifiques. Il a assisté aux recherches en cours et a voulu en tirer les conséquences philosophiques. Car Rodier dit bien que Straton est un philosophe et que, comme tel, il sent le besoin d'adapter la philosophie à la nouvelle donne scientifique. De la philosophie, il garde l'exigence totalisante qui apparaît, par exemple, dans la liste de ses ouvrages transmise par Diogène Laërce. Les savants, en revanche, ont fort bien pu faire usage de la *philosophie* de Straton, comme nous le verrons. Straton serait donc un aristotélicien unilatéral, en ce qu'il aurait abandonné le côté "métaphysique" de l'Aristotélisme, mais un aristotélicien quand même, qui tenterait de "sauver" la philosophie du Stagirite. On voit, en effet, que, dans cette liste il y a des ouvrages de politique et d'éthique, même s'ils ne constituent visiblement pas l'essentiel des publications de Straton. Les Anciens n'étaient pas nécessairement de l'avis de Rodier. En me demandant qui, de Rodier ou d'eux, est le plus près du "vrai" Straton, c'est donc quelques aspects du rapport de Straton à Aristote que je voudrais examiner ici.

Les Anciens semblent globalement en désaccord avec Rodier, parce que pour eux Straton, loin d'avoir adopté une attitude réformiste, a débarrassé le Lycée de l'Aristotélisme. Considérons quelques textes. Simplicius note ainsi que "Théophraste et Eudème, les compagnons d'Aristote, semblent avoir partagé les opinions d'Aristote sur le temps et les avoir enseignées. Straton de Lampsaque, en revanche, a critiqué la définition du temps donnée par Aristote et ses compagnons, quoiqu'il fût lui-même un élève de

² Ainsi Gille, 1980, 64: "il est difficile de dire, mais ne peut-on le supposer, si Straton a employé les méthodes que nous mettrons à l'acquis des mécaniciens." Straton père de la "pensée technique"? Quant à Gottschalk, 1965, 140, il présente tout simplement Straton comme "le premier Péripatéticien à faire un usage systématique de la méthode expérimentale." Mais Gottschalk ne tombe pas dans un anachronisme naïf qui ferait de Straton une sorte de Claude Bernard antique, en ce qu'il reconnaît le caractère apologétique de l'expérience chez Straton et chez les philosophes antiques en général: "Les expériences de Straton sont toujours ordonnées aux besoins d'une argumentation; dans les ouvrages des ingénieurs elles deviennent une fin en elles-mêmes" (ibid.).

Théophraste, lequel a suivi Aristote sur presque tous les sujets, et il prit une route nouvelle.”³ Cette route nouvelle consistait à nier que le temps puisse être le “nombre du mouvement” puisque le temps est continu et que compter avec des nombres c’est introduire de la discontinuité. Le fond de la critique de Straton telle qu’elle est rapportée par Simplicius est difficile à bien cerner, ne serait-ce que parce que la doctrine d’Aristote sur le temps est complexe. La définition du temps comme “nombre du mouvement” en *Physique* IV n’a, en effet, pas empêché Aristote d’avoir une approche du temps comme réalité continue. Dans un article brillant,⁴ H.-J. Waschkies résout cette difficulté en soutenant que la définition du temps en *Physique* IV comme nombre du mouvement, parce qu’elle donne du temps une image discrète, est antérieure à la conception aristotélécienne du continu de *Physique* VI. J’ai plutôt l’impression que la conception aristotélécienne du temps est restée continuiste, mais que cela n’empêche nullement de compter les heures et les minutes. Finalement, sur cette question du temps, Straton pourrait donc être plus aristotélécien que Simplicius ne le pensait et peut-être même franchement aristotélécien.

Cicéron écrit dans le *De Finibus* (V, 13): “Contentons-nous donc d’eux [Aristote et Théophraste]. En effet, leurs successeurs sont assurément à mon avis meilleurs que les philosophes des autres écoles, mais ils sont tellement dégénérés, qu’ils semblent être nés d’eux-mêmes. Vient en premier Straton le successeur de Théophraste qui se voulut physicien, et dans ce domaine il est certes grand, mais novateur sur la plupart des sujets et très peu moraliste” (trad. J. Martha = **8A**). Ici la filiation symbolique de l’école est brisée après Théophraste, jusqu’à faire de Straton un philosophe né par génération spontanée, ce qui veut dire que Straton et ses successeurs n’ont pas les caractères transmis par Aristote.

Plutarque, dans le *Contre Colotès* (1115B), se moque de la position syncrétique de Colotès qui estime que “Aristote, Xénocrate, Théophraste et tous les Péripatéticiens ont suivi la doctrine de Platon,” puis vient Straton: “Straton le plus éminent des autres Péripatéticiens en beaucoup de domaines ne s’entend pas avec Aristote et soutient des opinions contraires à celles de Platon sur le mouvement, l’âme, l’intellect et la génération” (**20**). Je reprendrai la suite de ce texte fondamental plus tard. Je voudrais simplement, pour l’instant, remarquer l’expression “le plus éminent des autres Péripatéticiens.” Elle introduit une coupure entre les “anciens” Péripatéticiens, ceux de la génération de Théophraste, et les “autres” c’est-à-dire les “nouveaux.” La rupture de Straton aurait donc fondamentalement lieu par rapport à Platon

³ *In Phys.* 788, 34 (Corollaire sur le Temps)= **31** et Théophraste FHS&D 151B.

⁴ Waschkies, 1991, 151–79.

donné comme le grand fédérateur de la philosophie antérieure. *A fortiori* la coupure à l'intérieur du Lycée a donc bien lieu avec Straton.

Il y a beaucoup d'autres textes que l'on pourrait invoquer à l'appui de cette coupure. Ainsi le passage de l'*Historia philosophica* du ps.-Galien (K. XIX, 228) où on lit que Straton "introduisit un caractère propre à sa spéculation physique" (3).

Pour savoir quel parti a raison et dans quelle mesure, il faut regarder les textes. Puisqu'il s'agit fondamentalement de physique, le point de départ le plus approprié est peut-être le fait que la doxographie rapproche souvent Straton de Démocrite et/ou d'Épicure. Je laisse de côté — certains d'entre eux feront l'objet d'autres exposés dans ce volume — plusieurs points précis de convergence entre Démocrite et Straton, comme la puissance *corporelle* du sperme (*Contra* Aristote, cf. ps.-Plutarque *Placita*, V, 905 B = 70), la distinction entre qualités primaires et qualités secondaires ou le fait que tous les sens sont des variétés du toucher. Dans une étude plus longue, j'aurais dû considérer chacune de ces questions pour voir si, comme je le pense, elles confortent ma lecture. Il y a, en revanche, une thèse qui semble établir une convergence plus fondamentale entre Démocrite et Straton, qui est celle que tous les corps sont pesants. Straton rompt ainsi avec la doctrine aristotélicienne de la pesanteur et de la légèreté absolues et donc aussi avec la thèse sur les lieux naturels (Cf. *Simpl. In De Caelo* 367, 30; 269, 30), le mouvement vers le bas étant le seul mouvement naturel. Il faudra y revenir. Ce rapprochement entre Straton et Démocrite est tout à fait fondamental pour le problème qui nous occupe, parce que tout le monde est conscient, dans l'Antiquité comme aujourd'hui, que Démocrite est le grand adversaire théorique d'Aristote et que leur opposition trouve son ampleur maximale à propos du problème des rapports entre mécanisme et finalité naturels. En face de la nature aristotélicienne qui "ne fait rien en vain," la grande explication concurrente c'est "le hasard et la nécessité" de Démocrite. La question devient donc celle de savoir si Straton peut être considéré comme un aristotélicien largement orthodoxe qui aurait introduit une dose plus ou moins forte de Démocritisme dans la doctrine du fondateur du Lycée, ou s'il a adhéré à une forme de Démocritisme, fût-elle teintée d'Aristotélisme, ce qui l'aurait fait passer dans le camp ennemi de celui d'Aristote. À première vue, c'est cette seconde hypothèse qui semble la mieux établie, car, d'après les témoignages qui nous restent, Straton aurait mis sur pied un système purement mécaniste d'explication des phénomènes naturels qui ne reposerait que sur le recours à des causes efficientes. Le fait qu'il ait été appelé, ou se soit fait appeler, "le physicien," ce qui est une donnée

doxographiquement bien attestée, pourrait alors signifier non seulement qu'il cantonne ses recherches à la physique en la déconnectant de la métaphysique mais aussi qu'il refuse tout recours aux causes finales.

En fait une telle interprétation, en dépit des éléments incontestables sur lesquels elle se fonde, doit être précisée, et d'abord parce qu'elle repose sur une lecture rapide de textes finalement assez peu nombreux, bien que fort intéressants. Il y a ainsi deux passages de Cicéron, en apparence, mais en apparence seulement, contradictoires, qui insistent sur l'absence chez Straton de cause "divine" dans l'agencement du monde. Dans le *De Natura Deorum* (I, 35), à l'intérieur d'une doxographie sur le rôle des dieux dans le fonctionnement de l'univers, Cicéron écrit: "On ne doit pas écouter son disciple [de Théophraste] Straton, celui qu'on nomme le physicien; il pense qu'une force divine existe dans la nature, qui doit avoir en elle les causes de la génération, de l'augmentation et de la diminution, mais qu'elle n'a ni sentiment ni figure" (19A). Autrement dit, toute divine qu'elle soit appelée, ce n'est pas une force intelligente qui mène l'univers. Dans le *Lucullus* (121), on lit: "Tu affirmes que rien ne pourrait exister sans dieu. Mais voici venir à la traverse Straton de Lampsaque qui dispense ton dieu d'une si grande charge (les prêtres des dieux n'en ayant aucune, il serait bien plus juste que les dieux soient les bénéficiaires de la dispense). Straton refuse d'avoir recours à une main-d'œuvre divine pour fabriquer le monde. Tout ce qui existe est entièrement l'œuvre de la nature, voilà ce qu'il enseigne, sans suivre celui qui prétend que notre monde s'est solidifié en un tout à partir de corpuscules hérissés ou lisses, pointus et crochus, avec du vide entre eux — rêveries de Démocrite, pense Straton, non pas un enseignement, mais l'expression d'un désir; quant à lui, passant en revue les diverses parties du monde, il enseigne que tout ce qui est ou viendra à l'existence, fut ou sera produit par des poids et des mouvement naturels" (trad. J. Kany-Turpin = 18). D'après ce dernier passage, Straton refuse à la fois l'action de quoi que ce soit de divin dans la formation de l'univers et rejette l'atomisme démocritéen. Ces passages ne sont contradictoires qu'en apparence, parce que la "force divine" du premier ressemble fort à un jeu nécessaire de forces matérielles. S'agit-il d'un retour à l'explication démocritéenne par "le hasard et la nécessité"?

Il convient, avant de tenter d'apprécier plus finement la doctrine de Straton sur la structure et la formation de l'univers, de rappeler sa position sur le poids, parce que c'est l'un des éléments essentiels de cette doctrine. On lit dans Stobée (in *Doxographi Græci* 311, 23): "Straton attache un poids naturel aux corps, et dit que les corps plus légers surnagent sur les

plus lourds comme si on les extrayait par pression (comme des noyaux)” (50A). Ce à quoi fait écho Simplicius (*In De Cælo* 269, 4): “tous les corps sont lourds et sont portés par nature vers le bas, et contre nature vers le haut” (49). Straton supprime donc la légèreté de son monde où les corps ne sont plus que plus ou moins pesants. Il ne s’agit pas là d’une révolution, mais d’un retour à des positions anciennes, puisque Aristote, au début du livre IV du *De Cælo*, reproche à certains de ses prédécesseurs de ne pas dire “ce que c’est que le pesant et le léger, mais ce qui est plus pesant et plus léger parmi les choses pesantes” (IV, 1 308a11), ce qui semble, en fait, être la position de Straton. Sur le mouvement, on peut lire les fragments 70–83 du recueil de Wehrli, l’un des traits saillants de la théorie stratonienne du mouvement étant une sorte de surenchère sur sa continuité par rapport à Aristote, ce qui l’éloigne encore plus d’une position atomiste.

Il faut reprendre le passage du *Contre Colotès* de Plutarque cité plus haut (14, 1115B = 20), texte curieux et obscur, et d’abord le citer plus longuement que je ne l’ai fait: “Straton le plus éminent des autres Péripatéticiens, en beaucoup de domaines ne s’entend pas avec Aristote et soutient des opinions contraires à celles de Platon sur le mouvement, l’âme, l’intellect et la génération. Finalement il dit que l’univers n’est pas un vivant, mais (δὲ) que ce qui est par nature suit ce qui est par hasard. En effet, le spontané fournit le branle initial, ensuite chacune des propriétés naturelles est ainsi réalisée.”

L’interprétation que Rodier propose de ce passage est la suivante. Straton adopterait une version de la théorie qui est critiquée par Aristote en *Physique* II, 8, et qu’il illustre par une citation d’Empédocle à propos des bovins à tête humaine. En gros, cette conception (que Darwin avait faussement attribuée à Aristote lui-même, en faisant ainsi un précurseur de la théorie de la sélection naturelle) pose que, par le seul jeu des agrégations d’éléments matériels arrivant au hasard, la nature réalise un grand nombre de combinaisons dont seules celles qui peuvent perdurer dans l’être survivent.⁵ Ceci s’applique, évidemment, principalement aux vivants: les bovins à tête humaine ne survivent pas, ceux qui ont une tête de bovin survivent. Épicure adhérerait à une conception de ce genre, comme le rapporte Lucrèce (II, 1058–66). Et Rodier d’écrire: “Straton regardait le hasard comme capable de donner naissance à quelque chose de coordonné, d’achevé, *perai-nomenon*. On voit la distance qui sépare ce point de vue de celui d’Aristote

⁵ Rodier cite un passage de Charles Batteux dans son *Histoire des causes premières, ou exposition sommaire des pensées des philosophes sur les principes des êtres* (1769), qu’il appelle par erreur *Histoire des causes finales*, dans lequel celui-ci attribue une doctrine de ce genre à Straton (83).

n'attribuant au hasard que l'indéfini, le désordonné, l'indéterminé" (85–86). Donc, sur ce point crucial, Rodier envisage plutôt une rupture franche avec Aristote qu'un accommodement de l'Aristotélisme au goût du jour hellénistique. Ensuite Rodier rapporte, avec prudence étant donné le manque de textes, la conception la plus probable que Straton se faisait de la formation de l'univers: par le seul jeu de la différence de pesanteur, les corps plus lourds vont au centre de l'univers alors que les corps plus légers, c'est-à-dire moins lourds, se dirigent vers la périphérie. Dans un tel système, la Terre se trouve immobile au centre du monde.

Sur ce dernier point, Rodier invoque une scolie à une homélie de saint Basile (44) qui est du plus grand intérêt. On lit, après un examen des thèses de Parménide, Xénophane et Platon sur la position de la Terre, que "par ailleurs Aristote et les Stoïciens disent que la Terre demeure immobile, mais il semble bien que ce soit Straton le physicien qui ait eu le premier recours à l'étiologie qui a cours aujourd'hui pour expliquer l'immobilité de la Terre." Cette étiologie, si on lit le passage correspondant de saint Basile, c'est le principe d'indifférence selon lequel la Terre, n'ayant pas où aller plutôt que là où elle est déjà, n'a aucune raison de se mouvoir. Du fait que les objets se situent dans l'univers selon leur poids, la Terre n'a, effectivement, pas d'autre endroit où aller que le centre de l'univers. Du point de vue de sa disposition, le monde de Straton présente donc de grandes ressemblances avec celui d'Aristote, en ce que son bas, vers lequel tendent les corps en tant qu'ils sont pesants, est son centre qui est aussi le centre de la Terre. Néanmoins, je ne comprends pas comment Rodier peut prétendre que la position de Straton qui ressort de ce témoignage est "la pure doctrine d'Aristote" (87), pour conclure que le scolaste s'est trompé et a attribué à Straton ce qui appartient à Aristote. Cette conception est, en effet, très différente de celle qui est fondée sur la doctrine des mouvements naturels et des lieux naturels.

Straton n'adopte pas la conception aristotélicienne, mais il serait également faux de considérer qu'il représente, en quelque sorte, une revanche de Démocrite sur Aristote — et cela à l'intérieur même de l'école aristotélicienne —, puisque Straton refuse les deux fondements de la pensée démocritéenne. D'une part, il est clair que Straton n'est pas atomiste : il refuse une organisation du monde par un dieu, mais "sans suivre celui qui prétend que notre monde s'est solidifié en un tout à partir de corpuscules hérissés ou lisses, pointus et crochus, avec du vide entre eux — rêveries de Démocrite, pense Straton, non pas un enseignement, mais l'expression d'un désir" (Cicéron, *Lucullus* 121 = 18, cité plus haut). Il se sépare, d'autre part, de Démocrite sur l'autre point fondamental de la philosophie de celui-ci, le problème du vide. Straton ne croit pas à l'existence d'un vide

infini, mais à l'existence de vide à l'intérieur des corps. Mais un passage du commentaire de Simplicius à la *Physique* d'Aristote nous montre combien cette théorie est subtile. Je laisse Kirk Sanders exposer la chose. En gros, contrairement aux tenants du vide infini qui environne le monde, Straton pense que le vide était coextensif à l'univers, mais qu'il était toujours rempli et que, donc, il n'avait "qu'une existence notionnelle (τῇ ἐπινοίᾳ)" (Simplicius *In Phys.* 618, 16–25 = **27B**). Cette absence de vide autour du monde a des conséquences cosmologiques essentielles, que nous allons examiner. Il faut par conséquent considérer le rapprochement entre Straton et Démocrite, si fréquent dans la doxographie, avec un esprit critique. Pour cela je voudrais considérer deux points: le hasard et les composantes élémentaires de la matière.

Le hasard: Straton contre Démocrite

En fait, il faut s'entendre sur le terme de "hasard," au moins sur quelques points, tant la notion est difficile et son histoire complexe dans la philosophie antique. Il n'est évidemment pas possible d'attribuer à Straton une conception du "par hasard" comme ce qui existe ou vient à l'être sans cause. Pour lui, comme pour Démocrite et Aristote, tout est soumis à des causes, ce que rappellent les passages de Cicéron cités plus haut: "tout ce qui est ou viendra à l'existence, fut ou sera produit par des poids et des mouvements naturels," c'est-à-dire des causes naturelles. William K. C. Guthrie, quand il se penche sur la notion de causalité chez Démocrite,⁶ considère que "hasard" et "nécessité" sont des notions tellement proches qu'elles se substituent souvent l'une à l'autre. Et Guthrie fait remarquer à juste titre que quand Aristote attaque les explications des physiologues (je pense que Guthrie a le chapitre 8 du livre II de la *Physique* à l'esprit), il les présente comme recourant à la nécessité — la pluie tombe par nécessité du fait de la condensation, les dents sont coupantes ou plates par nécessité —, puis il les critique en montrant que ce qui est par nature ne se produit pas par hasard. En fait aussi bien pour Aristote que pour Démocrite, et aussi sans aucun doute pour Straton, ce qui arrive par hasard, c'est ce qui se produit sans cause finale. À partir du moment où ce n'est pas la finalité qui a mis la terre au centre de l'univers, mais son poids, on peut dire, en restant fidèle à Straton, qu'elle est au centre de l'univers par hasard. Cette conception du hasard est celle des *Lois* de Platon (X, 889b), où nature et hasard sont mis ensemble et opposés à l'intelligence (l'âme). Dans ce texte, Platon expose

⁶ Guthrie, 1965, 2:414–19.

une théorie de la formation du monde entièrement fondée sur le hasard et la nature — théorie qui est celle de “gens très savants” de son époque — et qui est un matérialisme mécaniste: les corps élémentaires “emportés au hasard de leurs tendances respectives, à mesure qu’ils se rencontraient et s’associaient suivant certaines affinités, chaud avec froid, sec avec humide, mou avec dur, et tous autres mélanges des contraires, qui se combinaient suivant les jeux inévitables du hasard, engendrèrent ainsi et sans autre secours le Ciel tout entier et tout ce qu’il contient, puis les animaux et les plantes, une fois que, du mélange, furent nées les saisons” (889b–c, trad. A. Diès). “Les jeux inévitables du hasard” traduit la remarquable expression grecque (κατὰ τύχην ἐξ ἀνάγκης), qui, en conjuguant terminologiquement hasard et nécessité, va dans le sens de ce que dit Guthrie. On sait que l’Athénien réfute cette explication en soutenant la priorité de l’âme sur les processus corporels.

Contrairement à Aristote, Démocrite et Straton adoptent une conception que nous disons mécaniste du fonctionnement de la nature et notamment de la formation de l’univers. Rodier, nous l’avons vu, soutenait que Straton s’opposait à Aristote sur la question du hasard que le Stagirite identifiait à l’indéterminé. Rodier allait même jusqu’à écrire que “il [Straton] prenait le terme hasard dans le même sens que Démocrite pour désigner ce qui ne dérive pas d’une cause finale” (55). Je voudrais montrer que c’est, en fait, à Démocrite que Straton s’oppose sur la question de l’indétermination et donc du hasard. Dans un chapitre fameux de la *Physique* (II, 4), Aristote recense trois conceptions du hasard.⁷ La première est une manière de parler, et c’est quand on ne trouve pas la cause de quelque chose qu’on l’attribue au hasard; mais, ajoute Aristote, les gens qui emploient “hasard” en ce sens pensent qu’en fait rien n’arrive sans cause. Selon la troisième, le hasard est bien une cause, mais qui demeure cachée à l’esprit humain parce qu’elle est “divine et trop surnaturelle” (196b6). La deuxième doit, semble-t-il, être attribuée à Démocrite.⁸ Aristote trouve cette position “étonnante,” parce

⁷ Il ne fait pas, à ce stade de son analyse, de différence entre hasard (τύχη) et spontanéité (αὐτόματον).

⁸ Guthrie prétend que les trois peuvent être attribuées à Démocrite. Il ne serait pas impossible que Démocrite, comme le fait ordinairement Aristote pour la plupart des notions philosophiques qu’il utilise, prenne le hasard en plusieurs sens, et il semble bien que la doxographie puisse attribuer Démocrite des conceptions du hasard qui relèvent des trois catégories distinguées par Aristote. Mais Aristote mentionne bien que la première conception est le fait de “certains” (195b36), la seconde “d’autres” (196a24) et la troisième “d’autres” encore (196b5), un fait textuel qu’il est difficile d’évacuer, comme le fait Guthrie, 1965, 418 n.2, en expliquant que le texte de la *Physique* n’était “pas très soigneusement composé en vue de la publication.”

que “tout en niant que les animaux et les plantes sont et sont produits par hasard, et en disant que la cause en est, en fait, la nature, l’esprit ou quoi que soit d’autre de ce genre (car ce qui naît de chaque semence n’est pas le fait du hasard, mais de cette semence-ci naît un olivier, de celle-là un homme), [les gens qui soutiennent cette théorie prétendent] par contre que le ciel et les plus divins des corps visibles se seraient produits spontanément, sans qu’il y ait aucune cause du genre de celle qui intervient pour les animaux et les plantes” (196a29). Ce qui distingue les vivants du cosmos, c’est que les premiers se forment avec une régularité (presque) absolue, alors que du second nous ne voyons pas qu’on puisse lui attribuer une cause plutôt qu’un nombre infini d’autres. Il ne s’agit donc pas d’attribuer aux vivants une cause finale, mais de leur reconnaître des régularités dont la plus obvie est celle qui gouverne leur reproduction. Certains phénomènes, en revanche, sont dits procéder du hasard parce que les possibilités que les choses se passent autrement étaient en nombre infini. C’est le cas de la formation du cosmos. Ce principe fondamental d’indétermination dans les processus naturels s’exprime notamment par la fameuse maxime utilisée par les atomistes “pas plus ceci que cela.” Ce qui arrive par hasard, pour Démocrite, ce n’est donc pas seulement ce qui se produit nécessairement et sans cause finale, mais aussi ce qui souffre d’une indétermination radicale parce que cela aurait pu se produire autrement. D’après la deuxième conception du hasard décrite dans le passage cité d’Aristote, les événements dus au hasard seront donc surtout, peut-être même seulement, les formations originaires et notamment la plus originaire de toutes, la formation du cosmos. Ensuite s’introduisent des régularités qui font qu’un homme naît d’un homme. Peut-être faut-il alors comprendre que la théorie procédant par essais et erreurs, dans laquelle il n’y a pas plus de raison qu’un corps donné s’attache une tête de bœuf que d’homme ou de vautour, concerne la formation initiale des espèces vivantes, avant qu’elles ne se reproduisent régulièrement.

Les atomistes n’introduisaient pas tous la même indétermination dans la formation des choses. Les Épicuriens semblent bien introduire une indétermination supplémentaire en supposant le *clinamen*, une facilité que Démocrite ne s’était pas accordée. En fait, globalement, il n’en est rien. Je reste très impressionné par plusieurs articles déjà anciens de Charles Mugler,⁹ qui insistent notamment sur la “série de déformations qui ont profondément altéré la doctrine originale de Leucippe et de Démocrite” introduites par Épicure. Outre plusieurs autres points, Mugler insiste sur

⁹ Notamment Mugler, 1953 et 1956.

le fait que chez Démocrite le principe d'indétermination, qui fait que la nature n'a "aucune prédilection pour telle ou telle forme particulière," de sorte que "toutes les formes qui sont possibles dans l'espace existent réellement,"¹⁰ est ainsi lié à la thèse sur l'infinité des formes des atomes. Pour Épicure, en revanche, les atomes sont bien en nombre infini, mais le nombre de leurs espèces est fini "et cette réalité limitée sera régie par un nombre fini de lois de la nature."¹¹ Il faut donc garder à l'esprit, dans ce qui suit, que Straton a finalement beaucoup moins de divergences avec Épicure qu'avec Démocrite. Quoi qu'il en soit, ce que nous savons de la physique de Straton s'oppose fortement à une explication indéterministe du genre de celle des atomistes.

N'étant pas atomiste, Straton se devait d'identifier les composantes matérielles ultimes qui jouent le rôle des atomes. Sur ce point, la doxographie est cohérente: les composantes élémentaires pour Straton ce sont des "qualités" (cf. **45–53**). Peut-être s'agit-il des quatre qualités élémentaires du système aristotélicien (chaud, froid, sec, humide). La doxographie marque ici une hésitation qui est sans doute la preuve d'une difficulté. Certains témoignages, en effet, prétendent que pour Straton les principes de toutes choses sont le chaud et le froid (cf. le passage de Stobée = **46**, dont le texte est d'ailleurs mal établi). Un passage d'Épiphrane (**47**) fait même de la "substance chaude" la cause de toutes choses, mais comme ce même texte prétend que selon Straton les parties du monde sont en nombre infini, on peut avoir quelques doutes sur sa fiabilité. En tout cas, il semble y avoir chez Straton la même hésitation que chez Aristote à identifier ce qui est vraiment ultime des éléments ou de leurs qualités, comme le montrent deux témoignages, dont un de Plutarque (*De primo frigido* IX, 948C = **48**). Plutarque rapporte, en effet, que selon Straton, c'est l'eau qui est la cause du froid. Il est possible, et en tout cas cette hypothèse est intéressante, que Straton ait attribué une fonction principielle aux qualités parce qu'il ne pensait pas être en mesure de mettre en évidence des causes premières plus "fines" sans tomber dans la métaphysique. Ainsi Rodier considère que "si Straton réduisait le son au mouvement et n'en faisait pas autant des autres qualités, chaleur, lumière, etc., c'est qu'il pensait, sans doute, ne pas pouvoir le faire d'une façon assez scientifique, et sans retomber dans les rêveries de Démocrite" (71).¹² Mais je ne veux pas m'engager dans l'examen de ce problème, faute de place et, surtout, de moyens théoriques.

¹⁰ Mugler, 1953, 141.

¹¹ Mugler, 1956, 231.

¹² De même Gille, 1980, 62: "Straton était issu de l'école dynamiste d'Aristote, mais il connut aussi les recherches des épicuriens et, par là même, les avantages scientifiques du

Il faut maintenant montrer pourquoi Straton ne peut pas avoir une conception du hasard proche de celle de Démocrite et reposant sur le principe d'indifférence alors même que la scolie à saint Basile lui attribue une position de ce genre, et pourquoi il ne peut donc pas adhérer non plus à la conception par "essais et erreurs" que Rodier lui prête. On pourrait, pour cela, invoquer au moins deux raisons. La première c'est que faire des qualités les composantes élémentaires des choses semble éloigner du modèle de construction de ces choses par essais et erreurs que paraît, au contraire, favoriser l'atomisme. Si le modèle par essais et erreurs suppose qu'il se forme *au hasard* des agrégations de composantes qui doivent ensuite passer un examen supplémentaire pour perdurer et que cet examen est plus ou moins sévère selon la nature des choses — pour un vivant, l'examen sera sévère, parce qu'un bœuf à tête d'homme ne peut survivre (et encore, ce n'est pas l'hypothèse la pire) —, il semble difficile de transférer ce schéma des atomes ou de parties matérielles plus grandes aux qualités. En effet, des composantes matérielles — une tête humaine et un corps de bœuf, ou des atomes de sortes différentes — peuvent s'agréger *au hasard* au sens démocritéen du terme, c'est-à-dire selon le principe d'indifférence, ce que ne peuvent pas le chaud et le froid, l'humide et le sec dont les relations sont strictement réglées par leurs propriétés. On ne peut pas supposer qu'il s'est fait, au hasard, un composé chaud-froid, même en disant qu'il ne peut perdurer.

L'explication ultime de l'ordre du monde, c'est la pesanteur: tous les corps sont pesants et tendent vers le centre de l'univers, mais ils sont plus ou moins pesants, vraisemblablement en fonction de la quantité de vide qu'ils renferment. Ainsi un corps plus léger se placera naturellement au-dessus d'un corps plus lourd, ce qui fait, par exemple, que pour Straton la périphérie de l'univers est ignée, le feu étant sans doute l'élément le plus léger. C'est peut-être cette perspective qui avait conduit Straton à aller plus loin qu'Aristote dans l'étude du mouvement et notamment de la chute des corps. Il semble ainsi avoir reconnu la proportionnalité de la pesanteur et de la masse et avoir approché de plus près que son maître la notion d'accélération. Si l'on ajoute à cette pesanteur universelle les qualités qui sont les principes mêmes des choses, et notamment le chaud et le froid, on voit que la constitution du monde de Straton, loin d'être soumise à l'indétermination, obéit à un ensemble de processus des plus réguliers. Reprenons en le précisant ce qui a déjà été dit. La constitution

mécanisme, tout en reconnaissant que la synthèse mécaniste est impuissante à constituer les qualités et, par suite, à exclure définitivement le dynamisme. Aussi a-t-il continué à spéculer sur les qualités."

du monde de Démocrite est encadrée d'impossibilités et repose, en vertu du principe de complétude, sur l'idée que tout ce qui n'est pas impossible se réalisera un jour, puisque le temps est infini; pour l'atomisme démocritéen, l'impossibilité se réduisait à l'incapacité qu'avaient certains atomes de s'arrimer les uns aux autres du fait de leurs formes. La constitution du monde de Straton, en revanche, est encadrée par une nécessité qui fait que le lourd et le léger, le froid et le chaud, etc. se comportent *nécessairement* d'une certaine manière étant données leurs propriétés et que cela entraîne nécessairement la constitution de conglomerats matériels. Cette forme de nécessité est bien plus directive et contraignante que la simple interdiction de certaines conjonctions par l'incompatibilité des formes d'atomes. Le choix par Straton de qualités pour jouer le rôle de principes répond peut-être à une modestie épistémologique comme, nous l'avons vu, Rodier et Gille le pensent. Mais le fait est qu'il écarte fortement Straton du modèle indéterministe des atomistes.

Cette première raison, bien qu'elle nous oriente fortement vers une lecture non indéterministe de la formation des choses, reste pourtant insuffisante. On peut, en effet, imaginer que les qualités élémentaires de Straton s'apparient selon un nombre infini de combinaisons tout en restant soumises à leurs propriétés respectives. De même les atomes de Démocrite pouvaient s'agréger en respectant le réquisit de la compatibilité de leurs formes. Mais, et c'est la seconde raison de la divergence entre Straton et les atomistes, il y a un aspect de la cosmologie de Straton qui l'éloigne totalement et définitivement d'une cosmologie à la manière de Démocrite ou d'Épicure, qui est que pour Straton le monde est fini, c'est-à-dire composé d'une quantité finie de matière. Comme on l'a vu, en effet, le monde de Straton, pris dans son ensemble, est proche de celui d'Aristote en ce qu'il place la Terre en son centre. Mais les ressemblances vont beaucoup plus loin. Ainsi il semble que Straton a soutenu à la fois l'éternité du monde et sa finitude spatiale. Sur le premier point, Rodier, tout en reconnaissant que "rien ne nous permet d'affirmer d'une manière absolue que Straton professât l'éternité du monde," pense qu'elle "se déduit logiquement de ses opinions sur le temps" (73), ce qu'il faut, je crois, lui accorder. De même Rodier déduit-il la finitude spatiale du monde des positions de Straton sur le lieu. Et, de fait, quand Théodoret de Cyr et Stobée rapportent que, selon Straton, il n'y a pas de vide à l'extérieur du monde (26A et B), nous nous trouvons bel et bien devant un modèle largement aristotélicien du cosmos. Il n'est donc pas absurde de penser que, dans une masse finie de matière soumise à la loi de la pesanteur et aux interactions nécessaires de qualités élémentaires, la nécessité qui préside à l'organisation des choses prend un tour fatal qui est

loin de la description atomiste de mondes infinis se faisant et se défaisant indéfiniment. S'il fallait recourir à une image, on pourrait dire que la constitution du monde selon Straton ressemble à une réaction chimique mettant dans un lieu limité — une éprouvette par exemple — des quantités finies de corps inter-réactifs comme un acide et une base. Ce qui donne un nouvel état stable avec des quantités finies de sel et d'eau. D'une certaine manière, pour Straton le possible se confond avec le réel et finalement le hasard fait bien les choses, puisqu'il construit un monde qui est celui d'Aristote et qui est, en fait, le seul possible. Nous sommes alors vraiment aux antipodes de l'atomisme démocritéen. Le recours, proposé dans la scolie à saint Basile, au principe d'indifférence pour expliquer la position de la Terre dans la cosmologie de Straton est donc finalement plus erroné qu'exact.

Nous pouvons donc rapprocher Aristote et Straton, non seulement sur tel point particulier, mais aussi sur un aspect structurel et fondamental de leur pensée, à savoir qu'ils sont, assurément pour Aristote, vraisemblablement pour Straton, des *cosmologistes*. Dans un ouvrage justement fameux, Friedrich Solmsen remarquait qu'en posant un monde éternel pour répondre à la critique parméniidienne, Aristote tournait le dos à l'entreprise cosmogonique de ses prédécesseurs.¹³ Il est à noter que les successeurs d'Aristote, notamment les Stoïciens ou les Épicuriens reviendront à une conception cosmogonique, ce qui rend ce trait commun à Aristote et Straton encore plus remarquable. Si nous laissons les Stoïciens de côté, puisque c'est la confrontation entre Straton et l'atomisme qui nous intéresse surtout, on comprend la nécessité d'une approche cosmogonique, et non purement cosmologique, de la formation de l'univers de la part d'un atomiste comme Épicure. Pour lui, comme pour Démocrite, la conception de la constitution de l'univers *au hasard* des rencontres atomiques, au sens où j'ai montré que le hasard n'y avait pas le même sens que chez Straton, a besoin de *raconter une histoire*, alors qu'Aristote disqualifiait la question de l'origine du cosmos dans le temps, pour ne pas avoir à faire procéder l'être du non-être. Quand il décrit la formation du monde par le seul jeu de la pesanteur, du vide et des qualités élémentaires, Straton peut l'envisager comme un processus se déroulant dans le temps pour des raisons de clarté de l'exposé, mais il n'y est pas tenu par des raisons théoriques fortes. Il semble au contraire que son monde fini, nous l'avons vu, doive être considéré comme éternel. Il est, tout comme le monde d'Aristote, parcouru de changements internes, mais n'a jamais connu, à un moment donné, un épisode initial de mise en forme. Il semble donc tout à fait impossible que ce

¹³ Solmsen, 1960.

monde clos et éternel ait pu être précédé d'essais malheureux que la nature a été contrainte d'abandonner.

Straton aristotélicien?

Pourtant Straton ne semble pas pouvoir être rangé au nombre des épigones des “gens très savants” dénoncés par l'Athénien des *Lois*, c'est-à-dire de gens refusant l'explication finale pour se contenter d'un recours à la “nature” identifiée au “hasard.” D'après le passage du *Contre Colotès* de Plutarque cité plus haut, en effet, Straton distingue nettement ce qui est par hasard et ce qui est par nature. Le passage dit que “ce qui est par nature *suit* ce qui est par hasard,” et cela en contraste avec la thèse selon laquelle l'univers est un vivant. Il est, en fait, difficile de comprendre exactement ce que Plutarque veut faire dire à Straton. Il semble que le “par hasard,” qui correspond dans la fin du passage de Plutarque à l'*archè*, traduit par “branle initial,” régit la mise en ordre des composantes élémentaires du réel selon leurs propriétés physico-chimiques. C'est quelque chose comme ce qui est décrit par le texte de Platon cité plus haut. Le “par nature” correspond à un stade plus complexe et, donc, plus “formel.” Ceci est, d'ailleurs un emploi fondamentalement aristotélicien, puisque la nature d'une chose, c'est sa forme. Quant à ces “propriétés naturelles” (“propriétés” traduisant *pathê*) qui sont réalisées après que le branle initial a été donné, il y faut sans doute y voir les propriétés des réalités plus complexes qui “suivent” les composantes élémentaires soumises au “par hasard” c'est-à-dire à la nécessité. Notons que cette explication de la mise en ordre et du fonctionnement du monde répond en un sens à la critique ironique d'Aristote quand il expose la conception atomiste du hasard. Une fois le cadre général de l'univers mis en place — cela relevant du hasard au sens de Straton — viennent les régularités naturelles des êtres inclus dans cet univers. Ce “viennent” indiquant une succession dans le processus explicatif et non dans la formation des êtres, comme on l'a vu.

Je ne vois pas dans ce passage l'idée que le hasard ferait des essais qui auraient ensuite à passer un examen de viabilité. Batteux et Rodier ne pourraient donc certainement pas s'autoriser de ce texte pour soutenir que Straton avait adhéré à un système ressemblant à celui des “bovins à tête humaine,” pas plus que pour attribuer la même conception du hasard à Démocrite et à Straton comme le fait Rodier. De plus il n'est pas sûr que le *ἐπεσθαι* du texte de Plutarque indique une suite chronologique, cela semble même exclu s'il est vrai, comme on l'a vu, que le monde de Straton est éternel. J'y verrais plutôt un emboîtement logique, presque une conséquence:

si les composantes se sont assemblées selon les lois du hasard-nécessité, alors les propriétés formelles sont possibles et réelles. Nous sommes aussi loin du test de possibilité que passent les composés comme les bœufs à tête humaine que les qualités élémentaires qui se combinent nécessairement selon leurs propriétés sont loin des atomes qui s'agrègent au hasard si leurs formes ne l'empêchent pas. Ce que suggère, par contre, ce *ἔπεσθαι* c'est que le "par nature" n'a pas de fonction régulatrice sur ce qui se passe au stade du "par hasard." Pour Straton, le "par hasard" détermine le "par nature," mais pas l'inverse. Il s'agit là d'une position fondamentalement anti-aristotélicienne, en ce que, pour Aristote, la forme est le principe régulateur qui commande aux processus matériels de constitution des êtres. Sur ce point crucial Straton est aussi à l'opposé de Platon, pour qui l'âme est la réalité présupposée pour que les processus nécessaires puissent se déployer. On voit que Straton adopte une position authentiquement mécaniste, en ce qu'il fait venir un niveau d'organisation plus complexe (la nature) de stades moins complexes (ce qui est produit par le hasard) par le seul jeu de forces mécaniques déterminées. Mais nous sommes aussi dans un modèle très différent de celui des mécanistes attaqués à la fin du livre II de la *Physique* d'Aristote.

En fin de compte, donc, le hasard de Straton produirait le monde tel qu'il est parce que c'est le seul qu'il peut produire, alors que, conformément au sens courant du mot "hasard," le monde, ou plutôt chacun des mondes de Démocrite n'est qu'une possibilité parmi une infinité d'autres. Mais il faut aller un peu plus loin, en commentant ce que Plutarque dit du monde comme vivant. Plutarque relie la thèse que "le par nature suit du par hasard" au fait que le monde n'est pas un vivant. Cette liaison peut se comprendre de deux manières. (i) Une manière faible: le *δέ* répond à un *μέν* sous-entendu, et on doit comprendre: Straton dit d'une part que le monde n'est pas un vivant, et d'autre part que le "par nature" suit du "par hasard." (ii) Une manière forte: le *δέ* est alors adversatif. Le monde n'est pas un vivant, mais le "par nature" suit du "par hasard." Autrement dit, si l'univers était un vivant, le "par nature" ne suivrait pas du "par hasard." J'aurais tendance à adopter cette seconde lecture et à comprendre les choses ainsi: si le monde était un vivant, il produirait les phénomènes qui prennent place à l'intérieur de lui sans recourir à la seule nécessité, mais aussi en "décidant" de faire telle ou telle chose en vue de buts, comme le font les vivants, puisque, après tout, même l'huître décide de s'ouvrir pour avaler du plancton. Straton exprimerait alors l'idée, somme toute très simple, que les conceptions vitalistes de l'univers ont une tendance naturelle à être finalistes: l'univers comme vivant agit selon des buts. C'est pourquoi

les finalistes, au premier rang desquels on trouve Aristote, ont tendance à parler de la Nature et du vivant comme de sujets: la Nature ne fait rien en vain, la Nature compense d'un côté ce qu'elle enlève de l'autre, tel vivant va chercher ailleurs ce qu'il ne trouve pas à un endroit, etc. Pour Straton, au contraire, et Rodier insiste plusieurs fois sur ce point en y voyant un point de rencontre entre Straton et la physique moderne (51, 62 entre autres), la matière est inerte bien qu'elle soit évidemment mue.

Dans le passage du *Contre Colotès* cité plus haut, Plutarque a donc raison: nous sommes, avec Straton, à l'opposé de Platon. Qu'en est-il de sa position vis-à-vis d'Aristote? Cette question nous ramène à notre interrogation initiale sur le degré de fidélité de Straton au père fondateur de son école. Nous avons déjà vu que la cosmologie de Straton, si elle évacue certains traits essentiels de la cosmologie aristotélicienne, au premier rang desquels la théorie des lieux naturels, aboutissait à un cosmos d'aspect largement aristotélicien. Mais Straton rejette aussi les causes finales et construit une physique purement mécaniste. Nous avons vu que le passage d'états moins complexes (le hasard) à des états plus complexes (la nature) s'expliquait, selon Straton, par des causes purement mécaniques. Sans nier, car ce serait difficile de le faire, que ces positions placent Straton à l'opposé d'Aristote sur des aspects fondamentaux de leurs philosophies, on peut néanmoins penser que ce schéma d'une activité mécanique qui entraîne la constitution de propriétés formelles, et qui est la base de toute pensée mécaniste, doit être considéré à la lumière des derniers travaux sur la causalité chez Aristote et particulièrement en biologie. Nous assistons, en effet, parmi les interprètes d'Aristote, à une sorte de réévaluation des causalités matérielles et efficientes, c'est-à-dire de la nécessité, dans le domaine physique et notamment biologique. Selon cette perspective, l'explication par la fin se situe assurément, comme le dit Aristote, "sur un plan supérieur" (*Génération des animaux* II, 1 731b23) et c'est cela qui fait la supériorité d'Aristote sur Démocrite, mais l'explication mécanique est plus "basique" en ce que les lois physico-chimiques ne sauraient en aucun cas être violées. J'ai essayé de montrer cela dans un article inclus dans les *Mélanges* que nous avons offerts à Jacques Brunschwig,¹⁴ notamment à propos de la chute des cornes des cerfs. Expliquer les cornes par l'éruption de matière terreuse sur le front, c'est comme expliquer les narines par l'entrée de l'air dans la chair molle du fœtus. On n'a pas expliqué les cornes tant qu'on n'a pas dit que c'étaient des moyens de défense. Il n'empêche que la nature finale doit ruser avec le donné matériel qui, de toute façon, impose ses nécessités. Car, du

¹⁴ Pellegrin, 2002. J'ai repris cette thèse dans Crubellier et Pellegrin, 2002, 282 sv.

fait de causes nécessaires, la matière terreuse avec ses propriétés est là et il faut que la nature en fasse quelque chose, fût-ce quelque chose d'aussi peu satisfaisant que les cornes qui, pour les cerfs, sont largement inutiles (cf. *Parties des animaux* III, 2, 663 a 9). C'est la nature "rusée," "bon maître de maison" (*Génération des animaux* II, 6, 744 b 16) qui fait au mieux avec ce que la matière nécessaire lui fournit. Robert Bolton va plus loin en faisant de l'explication matérielle l'explication *ultime* à laquelle toutes les autres doivent en fin de compte être référées, du moins dans le domaine des êtres physiques.¹⁵

La causalité matérielle (et efficiente) est explicative en dernier ressort parce que, comme le montre bien Bolton, expliquer, pour Aristote, c'est joindre étiologie et démonstration. Le fameux syllogisme des plantes à larges feuilles qui perdent leurs feuilles¹⁶ est pleinement explicatif parce qu'il exhibe une liaison causale nécessaire. La liaison entre un organe et sa fonction, en revanche, n'est pas nécessaire puisque la fonction peut être remplie par des organes différents, ou, pour reprendre un exemple de Bolton portant sur un objet fabriqué, la cause finale de la torpille, qui est d'atteindre des bateaux, ne détermine par nécessairement la forme que la torpille doit avoir. De même pour les cornes des cerfs. La production de matière terreuse par l'organisme du cerf est nécessaire, mais cela n'implique pas que cette matière doit être utilisée dans des cornes et dans des cornes telles que celles des cerfs. Autrement dit, les cornes telles qu'elles sont chez tel animal ne sont pas expliquées de manière à la fois déductive et nécessaire par le but que la nature a assigné aux cornes, à savoir servir de moyens de défense. Il n'est évidemment pas question de faire de Straton un finaliste à la manière d'Aristote, ce qui serait aller contre toute la doxographie, mais j'ai l'impression qu'il est moins loin d'Aristote qu'il n'y paraît, pourvu qu'on lise ce dernier correctement. Au niveau de l'univers entier, Straton, en faisant dériver l'organisation du cosmos du seul jeu de forces matérielles toutes en fin de compte réductibles à la pesanteur, semble donc avoir pris au sérieux la cohérence de l'explication par les causes "mécaniques" reconnue par Aristote et être parvenu à une image du monde proche de celle de son maître. Il ne paraît pas, en revanche, avoir invoqué l'idée d'une perfection quelconque du monde, et c'est aussi cela que montre son refus de considérer le monde comme un vivant. On se souvient que dans le *De Cælo* Aristote affirme le caractère vivant du monde sans doute parce que le vivant est plus parfait que le non vivant.¹⁷

¹⁵ Cf. Bolton, 1997.

¹⁶ Cf. *Seconds Analytiques* II, 16 98a38 sv.

¹⁷ Le chapitre 2 du livre II du *De Cælo* affirme que "puisque le ciel est animé" (285a29) il

Il n'en reste pas moins que, pour Aristote, l'explication en biologie a un besoin absolu de causalité finale et que le seul jeu des forces mécaniques ne saurait rendre compte des régularités de la nature et de l'adaptation des vivants. La nature finalisée — la “nature selon la raison” disent les *Parties des animaux* III, 2 663b23 — doit donc faire le meilleur, ou le moins mauvais, usage possible des données fournies par la nature matérielle, mais sans cette nature finalisée, son ingéniosité et ses ruses il n'y aurait pas de monde vivant. Il n'est finalement guère étonnant que dans le domaine des vivants Straton soit à peu près muet. La doxographie lui attribue un ouvrage sur “les animaux posant problème,” sans que l'on sache exactement ce que cela veut dire, un ouvrage sur “les animaux fabuleux” ainsi que d'autres livres sur la génération des animaux et certains processus physiologiques comme la sensation et la faim. Sur les parties de la physique aristotélicienne où la finalité est absente, en revanche, Straton semble avoir mené des recherches étendues et importantes. C'est le cas de la météorologie, au sens aristotélicien du terme. Dans ce domaine, les témoignages sont assez nombreux et, surtout, assez fournis, que ce soit celui de Sénèque sur l'interaction du chaud et du froid (53), le long passage des *Pneumatiques* de Héron d'Alexandrie sur les corps élémentaires et le vide (Wehrli f. 88)¹⁸ ou l'exposé de Strabon sur l'explication par Straton de la formation du Pont-Euxin (54). Dans ce dernier exemple, Straton semble s'éloigner du schéma “éternaliste” dont je l'ai plus haut crédité. Il décrit en effet le Pont-Euxin comme s'étant à un certain moment frayé un chemin par le Bosphore et prévoit que

a des directions. On a souvent soutenu qu'Aristote faisait ici allusion à l'un de ses écrits, mais Catherine Dalimier et moi-même pensons qu'il s'agit plutôt d'une affirmation acceptée par Aristote parce qu'elle lui paraît fondée (cf. Dalimier et Pellegrin, 2004, note *ad. loc.*). Dans la *Génération des animaux*, Aristote affirme que “il est meilleur de vivre que de ne pas vivre” (II, 1 731b28), or le ciel est parfait.

¹⁸ À ce fragment il faut ajouter au moins les fragments 56 et 67 de Wehrli. Si ces fragments peuvent bien être considérés comme exprimant des doctrines stratonniennes — ce qui ne me semble pas totalement avéré —, alors on verrait un “mécanicien” commencer l'un de ses traités scientifiques par des “considérations préalables” d'ordre philosophique sur le vide empruntées à Straton. Héron fait explicitement référence, dès la première ligne de son traité, à des “philosophes,” que beaucoup de savants ont identifiés à Straton. Ainsi Gottschalk, 1965, 127–41, qui procède par élimination: l'allusion de Héron doit être à un Aristotélicien, qui ne peut être ni Aristote, ni Théophraste, donc . . . Sans faire de Straton un savant, cela montrerait néanmoins qu'il a eu, dans les milieux scientifiques, une influence importante, renforçant ainsi B. Gille contre G. Rodier. Les arguments de Gottschalk sont impressionnants, mais Héron date sans doute du I^{er} siècle après J.-C., ce qui donne une certaine fragilité à une généalogie de ce type. En fin de compte l'attitude critique de Sylvia Berryman dans ce volume, qui refuse de voir un texte de Straton derrière les mots de Héron, paraît la plus défendable.

le Pont pourrait bien s'ensabler complètement dans le futur en comparant sa situation avec certains lieux d'Égypte aujourd'hui au milieu des terres qui, dit-il, furent jadis situés sur les côtes. Mais de telles transformations longues sont également repérées par Aristote dans ses *Météorologiques* sans que cela remette en cause l'éternité du cosmos.

On trouve chez Straton un réajustement complet de la place et du statut de la physique par rapport à Aristote. Pour ce dernier, en effet, l'étude des vivants est à la fois le chapitre le plus important, par l'étendue des textes qui nous sont parvenus, de la physique et le plus caractéristique de la recherche physique, en ce que le vivant est l'exemple le plus parfait d'être physique. Straton sépare nettement physique et biologie, sans que l'on sache s'il a théorisé cette séparation, ou si elle lui a été imposée par son impuissance à expliquer le vivant. Peut-on considérer que l'extension de la perspective théorique de Straton aux vivants et à leurs fonctions a été sinon accomplie, du moins projetée par des savants et des philosophes qui auraient pu être influencés par Straton? On sait que Herman Diels¹⁹ avait soutenu que Straton avait eu une grande influence sur les médecins hellénistiques, notamment Érasistrate, mais Luciana Repici a raison d'avoir tempéré les ardeurs du philologue allemand. Il n'est nul besoin de faire de Straton la cause de l'abandon partiel du finalisme aristotélicien par Érasistrate alors même qu'il adopte un cadre conceptuel largement aristotélicien, abandon que Galien lui reprochera.²⁰

Conclusions

Les conclusions auxquelles peuvent parvenir des spéculations aussi incertaines ne sauraient être que hautement hypothétiques. Finalement les remarques qui précèdent nous orientent vers une réponse à notre question initiale — Straton aristotélicien ou parricide? — qui pencherait plutôt du côté de l'interprétation de Rodier que de celle de Cicéron et de Simplicius, mais avec des attendus pour le moins paradoxaux. Or, souvent, un jugement vaut par ses attendus plus que par sa conclusion. Tout semble se passer comme si Straton prenait au sérieux la consistance des explications mécanistes, dont les commentateurs modernes n'ont pas assez vu qu'Aristote était aussi un partisan, et comme si Straton s'en servait pour donner une nouvelle assise à l'image aristotélicienne de l'univers dans un monde où

¹⁹ Diels, 1893, 101–27; argument justement rejeté par Repici, 1988, notamment p. 85 sv. Diels fait de la doctrine médicale d'Érasistrate un "mélange" de la théorie médicale de Dioclès de Caryste et de la physique de Straton.

²⁰ Cf. Vegetti, 1995, 1:85.

le finalisme aristotélicien était peut-être devenu difficilement compréhensible. Qui, en effet, pouvait encore saisir le subtil équilibre qu'Aristote avait instauré entre l'explication par les causes matérielle et efficiente et celle par les causes formelle et finale, alors même que la scène philosophique était dominée d'un côté par le matérialisme providentialiste extrémiste des Stoïciens et de l'autre par l'atomisme épicurien? Aristote avait construit sa physique principalement contre le mécanisme, notamment sous sa forme démocritéenne, en lui opposant un finalisme radical, même s'il est bien tempéré. Au niveau de l'étude des vivants, promue par Aristote chapitre principal de la physique, les atomistes ont été à la peine pour expliquer le foisonnement harmonieux et régulier des formes de vie. Au niveau de l'image du cosmos, en revanche, Aristote semblait avoir perdu la partie en ce que sa cosmologie était restée sans écho et que les écoles hellénistiques étaient revenues à une position cosmogonique. L'image démocritéenne de mondes infinis, infiniment constitués et infiniment détruits dans un espace infini était bien plus acceptable pour les Stoïciens et, évidemment, pour les Épicuriens, que le monde clos et éternel d'Aristote. "Mais voici venir à la traverse Straton de Lampsaque" qui restaure l'image de ce monde en s'appuyant sur certains des présupposés principaux du vieil adversaire, peut-être parce que, comme le disait Bertrand Gille, il avait reconnu "les avantages scientifiques du mécanisme." Alors l'intuition centrale de l'ouvrage de Rodier serait fondamentalement juste: Straton aurait rendu acceptable l'univers d'Aristote pour des gens dont l'horizon philosophique avait changé. Tant pis pour les vivants. De toute façon la biologie finira bien par quitter la physique.

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Strato on “Microvoid”

Kirk R. Sanders

Despite its relative brevity, the list of works that Diogenes Laertius attributes to Strato of Lampsacus,¹ Theophrastus’ successor and head of the Peripatos from c. 287–269 BCE, nevertheless suggests a considerable breadth of interests. The preserved titles range over subjects in ethics, cosmology, logic, physics, psychology, theology, zoology, and more. Strato’s reputation in antiquity, however, seems to have rested on his work in natural science to such an extent that he came to be known simply as “the Physicist” (ὁ φυσικός).² Within Strato’s natural philosophy, one particular subject of scholarly interest, and controversy, has been his position regarding the existence and nature of void. Strato apparently devoted an entire treatise to the topic,³ but, as with any effort to reconstruct the details of his thought, we are today dependent on a relatively few surviving fragments and ancient *testimonia*.⁴ In this particular case, unfortunately, the relevant evidence is not merely ambiguous but even apparently contradictory.

¹ Diog. Laert. 5.59–60.

² Diog. Laert. 5.58.

³ Among the works Diogenes attributes to Strato is one entitled simply *On the Void* Περὶ τοῦ κενοῦ.

⁴ The relevant sources appear as **26A–30B** in the edition of fragments and *testimonia*

H. Diels was the first among modern scholars to attempt a systematic reconstruction of Strato's physical theory, including his theory of the void.⁵ In many respects, Diels' seminal work on the subject continues to frame the terms of the contemporary debate. I shall restrict my focus in this paper to just one of the more substantive claims advanced by Diels, namely that Strato, in a break from Peripatetic tradition, recognized the existence of imperceptibly small interstices, or "pockets," of void interspersed throughout all matter. Diels' attribution to Strato of this "microvoid theory," as it has come to be known, has found both supporters and detractors in subsequent scholarship.

Of the ten fragments on the subject of void in the edition of Strato's fragments included in the present volume, Simplicus, the sixth-century CE Neoplatonist commentator on Aristotle, supplies six. It is in one of these that we find the only ancient evidence directly associating the microvoid theory with Strato by name. I quote the first half of the relevant fragment as printed by Sharples:

ταῦτα μὲν οὖν ὁ Ἀριστοτέλης περὶ τοῦ κενοῦ διατάξατο· ὁ μὲντοι Λαμψακηνὸς Στράτων δεικνύναι πειράται, ὅτι ἔστι τὸ κενὸν διαλαμβάνον τὸ πᾶν σῶμα, ὥστε μὴ εἶναι συνεχές, λέγων ὅτι "οὐκ ἂν δι' ὕδατος ἢ ἀέρος ἢ ἄλλου σώματος ἐδύνατο διεκπίπτειν τὸ φῶς οὐδὲ ἡ θερμότης οὐδὲ ἄλλη δύναμις οὐδεμία σωματική. πῶς γὰρ ἂν αἱ τοῦ ἡλίου ἀκτίνες διεξέπιπτον εἰς τὸ τοῦ ἀγγείου ἕδαφος; εἰ γὰρ τὸ ὑγρὸν μὴ εἶχε πόρους, ἀλλὰ βία διέστελλον αὐτὸ αἱ αὐγαί, συνέβαινεν ὑπερεκχεῖσθαι τὰ πλήρη τῶν ἀγγείων, καὶ οὐκ ἂν αἱ μὲν τῶν ἀκτίνων ἀνεκλῶντο πρὸς τὸν ἄνω τόπον, αἱ δὲ κάτω διεξέπιπτον." (*On Aristotle's Physics* 4.9 216b27–28, [CAG 9, p.693.10–20] = **30A** [in part])

This then is what Aristotle set out about the void. But Strato of Lamp-sacus tries to show that void divides the whole of body, so that it is not continuous, saying "Neither light nor heat nor any other bodily power would be able to pass right through water or air or another body [if this were not the case]. For how would the rays of light pass right through to the base of a vessel [of water]? For if the liquid did not have pores, but the rays divided it by force, the result would be that full vessels would overflow, and it would not be the case that some of the rays would be reflected upwards, while others pass through below." (trans. Sharples)

edited by R. Sharples for this volume. For the sake of simplicity, I shall throughout my paper refer to all of the material collected therein as "fragments," even where these are, properly speaking, *testimonia*.

⁵ Diels, 1893, 101–27.

To Diels also belongs the credit of having recognized an almost verbatim repetition of this very passage (without the mention of Strato's name) in the introduction to the *Pneumatics* of Hero of Alexandria (= **30B**), an engineer active in the latter part of the first century CE. It was Diels' belief that the introduction to Hero's work, which defends a version of the microvoid theory at length, was largely or wholly borrowed from Strato's own *On the Void*, possibly through the mediation of Erasistratus, an Alexandrian physician of the third century BCE with apparent links to the Peripatetic school. Diels was followed in this belief by Wehrli, who printed six passages of varying length as "fragments" of Strato (which together comprise more than half of all the material collected in his edition under the heading "Porentheorie"),⁶ and by H. B. Gottschalk, who in his own edition of Strato includes the entirety of Hero's introduction as a single fragment.⁷ In order to avoid the many complications that beset discussions of possible sources for Hero's views as well as the threat of circularity involved in using the works of Hero or Erasistratus to simultaneously fill out and provide confirmation for Strato's own position, I shall simply set aside here questions concerning the relationship of Hero's writings to those of Strato.⁸ I shall instead confine myself to a discussion of those few fragments concerning the existence or nature of void, mostly from Simplicius, in which Strato is explicitly mentioned.

That the Simplicius passage cited above does in fact constitute an explicit attribution, whether accurate or otherwise, of the microvoid theory to Strato has generally been taken for granted, but a passing comment in a recent paper by S. Berryman seems designed to cast doubt on even this point. Berryman cites the fragment in the course of surveying evidence usually adduced in support of the claim that Strato allowed for the actual existence of void. In summarizing its contents, she states that, while Simplicius does attribute to Strato the view that *πόροι* are what allow for the penetration of light through water, etc., "he does not say that these passageways are void."⁹ It is true, of course, that a theory of pores is conceptually distinct from a microvoid theory. Empedocles, for example, the most famous exponent of a pore theory in antiquity, did not conceive of his pores as void.¹⁰

⁶ The section dedicated to "Porentheorie" in Wehrli, 1952, encompasses frs. 54–67; of these, frs. 56, 57, 64, 65b, 66, and 67 are from the introduction to Hero's *Pneumatics*.

⁷ Gottschalk, 1964–66, 95–182. Hero's introduction to the *Pneumatics* appears as fr. 1a therein.

⁸ For more on this particular subject, see the contribution by S. Berryman in this volume (= ch. 6).

⁹ Berryman, 1999, 148; cp. Lehoux, 2002, 10–11.

Also relevant in this context is the discussion of pores found in *Meteorology* 4.9 386a29–b7, a passage to which I shall return later.

The wording of **30A**, however, leaves little room for doubt that Simplicius means to identify Strato's pores with these so-called microvoids. The first sentence of the quotation that Simplicius attributes to Strato is phrased in unreal, or contrafactual, terms: "neither light nor heat nor any other bodily power would be able to pass right through water or air or another body" (οὐκ ἂν δι' ὕδατος ἢ ἀέρος ἢ ἄλλου σώματος ἐδύνατο διεκπίπτειν τὸ φῶς οὐδὲ ἡ θερμότης οὐδὲ ἄλλη δύναμις οὐδεμία σωματική).¹¹ Simplicius' own introductory comments make clear that such would only be the case on the condition that void did not divide the whole of body, as Strato wished to prove it did. The same quotation's final sentence is cast in similarly contrafactual terms: if a given liquid did not have pores (εἰ γὰρ τὸ ὑγρὸν μὴ εἶχε πόρους), then, among other consequences, light would not penetrate it in the way that we in fact observe this to happen (οὐκ ἂν αἰ μὲν τῶν ἀκτίνων ἀνεκλῶντο πρὸς τὸν ἄνω τόπον, αἰ δὲ κάτω διεξέπιπτον). The ability of light to penetrate to the bottom of liquid-filled vessels is one of the phenomena referred to in the quotation's opening line as well. The nearly identical form of these two consequents strongly suggests clear that Simplicius himself regards "If there were no void dividing the whole of body" and "If there were no pores" as essentially equivalent protases. The particular theory of pores he ascribes to Strato should therefore be understood as simply an alternate way of expressing a microvoid theory, not as something to be distinguished from it.¹²

A more promising approach than denying that **30A** constitutes an explicit attribution of the microvoid theory to Strato has been to maintain that Simplicius here simply mischaracterizes Strato's position, and to take as corroborating evidence statements Simplicius himself makes elsewhere.¹³ In two passages in particular from *On Aristotle's Physics, Corollary on Place*, Simplicius seems to credit Strato with the view that void is a theoretical entity only, and is in fact always occupied by body:

¹⁰ See, e.g., Thphr. *De sensibus* 7–24.

¹¹ Given that the protasis is not explicitly stated, the construction here is more precisely characterized by Smyth, 1956, 402, §1786 as an "Unreal Indicative"; for its close connection to the present contrafactual conditional, see Smyth, 402–3, §1787–88.

¹² Lahoux, 11, notes that the version of a pore theory suggested by Simplicius' testimony would allow Strato to have endorsed certain general features of Empedocles' theory while also accepting Theophrastus' express criticism of that theory, namely that the pores in question would have to be actual voids in order for the model to work.

¹³ Representative of such an approach is Gatzemeier, 1970.

τῶν δὲ ἀσώματων λεγόντων οἱ μὲν πάντῃ ἀδιάστατον, οἱ δὲ διαστατὸν λέγουσι· καὶ τῶν πάντῃ ἀδιάστατον οἱ μὲν ὑποκείμενον τοῖς σώμασιν ὡς Πλάτων τὴν ὕλην τόπον λέγων, οἱ δὲ τελεσιουργὸν τῶν σωμάτων, ὡς ὁ ἡμέτερος Δαμάσκιος· τῶν δὲ διαστατὸν λεγόντων οἱ μὲν ἐπὶ δύο διεστῶς ὡς ὁ Ἀριστοτέλης τε καὶ ὁ Περίπατος ἅπας, οἱ δὲ ἐπὶ τρία, καὶ τούτων οἱ μὲν πάντῃ ἀδιάφορον καὶ ποτε καὶ ἄνευ σώματος μένον ὡς οἱ περὶ Δημόκριτον καὶ Ἐπίκουρον, οἱ δὲ διάστημα καὶ ἀεὶ σῶμα ἔχον καὶ ἐπιτήδειον πρὸς ἕκαστον ὡς οἱ κλεινοὶ τῶν Πλατωνικῶν καὶ ὁ Λαμψακηνὸς Στράτων (CAG vol. 9 p.601.16–25 Diels 1882 = **27A**)

Of those who say [that place is] incorporeal some say [that it is] unextended in every dimension, others that it is extended. Of those who [say that it is] unextended in every dimension some [say that] it underlies body, like Plato when he says that matter is place, and others that it brings bodies to completion, like our Damascius. Of those who say [that it is] extended some [say that it is] extended in two dimensions, like Aristotle and all the Peripatos, others in three, and of the latter some that it is undifferentiated in every direction and sometimes remains without [being occupied by] body, like the followers of Democritus and Epicurus, others that it is an extension and always has body [in it] and is fitted for each thing, as [do] the distinguished ones among the Platonists and Strato of Lampsacus. (trans. Sharples)

οἱ δὲ ἰσόμετρον αὐτὸ τῷ κοσμικῷ σώματι ποιοῦσι, καὶ διὰ τοῦτο τῇ μὲν ἑαυτοῦ φύσει κενὸν εἶναι λέγουσι, πεπληρῶσθαι δὲ αὐτὸ σωμάτων ἀεὶ, καὶ μόνη γε τῇ ἐπινοίᾳ θεωρεῖσθαι ὡς καθ’ αὐτὸ ὕφεστώς, οἷοί τινες οἱ πολλοὶ τῶν Πλατωνικῶν φιλοσόφων γεγόνασι· καὶ Στράτων δὲ οἶμαι τὸν Λαμψακηνὸν ταύτης γενέσθαι τῆς δόξης (CAG vol. 9 p.618.20–25 Diels 1882 = **27B**).

Others make [place] equal in extent to the body of the world, and for this reason they say that it is empty in its own nature, but is always filled with bodies, and is only considered in thought as subsisting in itself, as the majority of Platonist philosophers have [supposed]. And I think that Strato of Lampsacus shared this view. (trans. Sharples)

Before turning specifically to the possible relevance of these two passages for the attribution of a microvoid theory to Strato, it is worth noting some other, important features about them. Simplicius tells us that Strato, like Democritus, Epicurus, and the “distinguished” Platonists, made place three-dimensional. This claim seems to find independent confirmation in the report of Strato’s definition of place given by Stobaeus (= **26B**).¹⁴ As

¹⁴ Stobaeus report of Strato’s definition of place also employs the term διάστημα,

Simplicius himself remarks, such a view of place puts Strato at odds with Aristotle's own position, at least as we find it expressed in *Physics* 4.1–5.¹⁵ Aristotle there argues for the view that place is two-dimensional, considering and explicitly rejecting arguments for its three-dimensionality.¹⁶ Strato was apparently not, however, the first within the Peripatos to challenge Aristotle's views on place. Theophrastus also seems to have expressed criticisms of Aristotle on this point, though it remains a subject of debate whether his criticisms were intended as an outright rejection of Aristotle's views or in the spirit of *aporia* associated with them.¹⁷ Whether, or to what extent, Strato's view of place as three-dimensional and isomorphic with the cosmos as a whole has its antecedents in the work of Theophrastus is unfortunately impossible to establish with any degree of certainty.

In addition to highlighting differences between the views of Strato and Aristotle regarding place, **27A** and **27B** also indicate at least one point of disagreement between the two men on the related subject of void. Aristotle's rejection of void in *Physics* 4.6–9 is complete and unequivocal. Void exists, he insists, “neither separated nor unseparated” (οὔτε κεχωρισμένον οὔτε ἀχώριστον).¹⁸ Strato, by contrast, is clearly said to have allowed for at least the theoretically separate existence of void isomorphic with the entire cosmos — i.e., which encompasses all place — even if this void is in fact always occupied by body.

M. Gatzemeier has argued that Strato's acceptance of void was limited entirely to this theoretical, or potential, sense.¹⁹ He claims to find support for this view in the shared vocabulary of reports from Theodoretus and Stobaeus respectively (= **26A** and **26B**). But the move from “it is possible for void to exist within the cosmos,” which is the view both Theodoretus and Stobaeus attribute to Strato (ἐνδοθεν δὲ δυνατόν εἶναι [sc. κενόν], **26A**; ἐνδοτέρω δὲ δυνατόν γενέσθαι [sc. κενόν], **26B**), to “all void in the cosmos is (merely) possible,” the view Gatzemeier wishes to attribute, is logically

which, as Lahoux, 7, notes, is a term reserved by Aristotle in *Phys.* 4 for three-dimensional conceptions of place. For an attempt to reconcile any apparent differences between the definitions of place attributed to Strato by Simplicius and Stobaeus respectively, see Furley, 1985, 594–609; repr. 1989, 149–60. (Subsequent references are to the more widely accessible, reprinted version.) Lahoux, 3–10, by contrast, thinks the definitions irreconcilable, and argues in favor of Simplicius' version.

¹⁵ For a discussion of Aristotle's views of place in *Cat.* and *Phys.* 4 respectively and the relation between them, see Mendell, 1987, 206–31.

¹⁶ See in particular Arist. *Phys.* 4.4.

¹⁷ See, e.g., Sorabji, 1988, 139–66; and Algra, 1995, esp. 231–60.

¹⁸ *Phys.* 4.7 214a19.

¹⁹ Gatzemeier, 94–96.

suspect. And while it is true that neither of the reports in question explicitly states that Strato held there to be actual void within the cosmos, each fragment considered in its entirety certainly implies as much. **26A** in particular begins with the statement that the Stoics denied the existence of any void internal to the cosmos but maintained the (actual) existence of an infinite void outside the cosmos as a whole. Strato is then offered as a representative of the diametrically opposed view, i.e., as someone who recognized the existence of intra- but not extra-cosmic void. The emphasis here is not on the word *δυνατόν* and an imagined contrast between actual and potential void, as Gatzenmeier would have it, but rather between actual void that is external to the cosmos (*ἔξωθεν*; cp. *ἔξωτέρῳ* in **26B**) and presumably no less actual void internal to it (*ἐνδοθεν*; cp. *ἐνδοτέρῳ* in **26B**). Neither Theodoretus nor Stobaeus specifically address the issue of whether the intra-cosmic void recognized by Strato was macro- or microscopic in nature; but nothing in their limited testimony should be taken to offer any support for the view that this void was for him a mere conceptual possibility.

The statements in **27A** and **27B** to the effect that no place is devoid of body have themselves also been taken as prime evidence against Strato's acceptance of any theory of actual, as opposed to theoretical or potential, void.²⁰ Of course, even if one were to grant an inconsistency between the passage cited earlier from Simplicius' commentary *On Aristotle's Physics* (= **30A**) and these statements in his *Corollary on Place*, it would not follow that the testimony of the latter should be preferred to that of the former. Indeed, the juxtaposition in **27A** of a view said to be held by “the entire Peripatos” (ὁ Περίπατος ἅπας) with that of Strato, himself the school's third scholarch, as well as the qualifying οἱμαί in **27**, might themselves suggest a certain carelessness, confusion, or uncertainty on the part of Simplicius in the reports contained in these two particular passages. There is, however, no need to go so far. Even on the more charitable assumption that the latter two fragments provide a generally accurate report of Strato's actual views, it remains possible to harmonize their testimony with that of **30A**.

In **27A**, Simplicius contrasts not only Strato's view of place with that of Aristotle, but also Strato's view of void with that of the Atomists. The denial here of void as anything other than a theoretical entity should therefore be examined against the background of contrasting Atomist claims regarding its actual existence. For Democritus and Epicurus alike, the cosmos is comprised equally of body and void, the latter no less a real existent than the former.²¹ “Body” (σῶμα) for the Atomists is itself an ambiguous term. They

²⁰ Ibid., 94–95.

²¹ I do not mean to imply that Democritus and Epicurus did not differ at all with

use it to refer both to macroscopic objects (e.g., chairs, people, etc.) and to the microscopic, indivisible atoms out of which such macroscopic objects are made. Something similar holds true of void. That is, the Atomists speak of void at both the micro- and macroscopic levels: there is void between the individual atoms that in their combination and arrangement comprise perceptible, macroscopic bodies; void between these macroscopic bodies themselves; and even infinite void outside of any given world, of which there are infinitely many.

That Strato was no Atomist should be clear. In the first place, our sources are consistent and emphatic regarding his rejection of any void external to the cosmos.²² There is also no evidence to suggest that he rejected the core Peripatetic doctrine of the infinite divisibility of matter in favor of indivisible, microscopic atoms. Acceptance of a microvoid theory by itself would certainly not require that he have done so. It is true that in **30A**, Simplicius attributes to Strato the view that “body is not continuous (*συνεχές*)” because void exists interspersed throughout it; however, nothing prevents him from holding the view that the matter of a body that falls between any given pair of pores — which is just to say, all the matter of a given body — is itself infinitely divisible.²³

Acceptance of a microvoid theory would also not entail belief in the existence of place unoccupied by body. To think otherwise is to misunderstand what sorts of things occupy place. These are macroscopic bodies as a whole, not their constituents or parts, with which imperceptibly small pockets of microvoid dispersed throughout these same bodies may reasonably be compared.²⁴ The specific view on place attributed to Strato in **27A** and **27B** can therefore be seen as a way of expressing his rejection of void at the macroscopic level as posited by the Atomists, among others. Such a rejection is perfectly compatible with the acceptance of microvoids internal to macroscopic bodies claimed for him in **30A**.²⁵

The distinction between void that is internal to macroscopic bodies and void that is external to these also helps to explain how Strato could

regard to their respective conceptions of void. It has sometimes been argued that Epicurus' conception of void represents a refinement of the earlier Atomist position in light of Peripatetic criticism (see, e.g., Inwood, 1981, 273–85); however, the extent to which Epicurus was aware of, and responded to, Aristotle's writings generally is itself the subject of much scholarly debate.

²² The contrast with Democritus and Epicurus on this point is made explicit in **26C**, but cp. also **26A** and **26B**.

²³ Cp. Furley, 151–52.

²⁴ Cp. Lahoux, 14–15.

²⁵ Cp. Gottschalk, 131.

endorse certain of Aristotle’s arguments against the Atomists while still accepting the existence of void in some form. Aristotle’s discussion at *Phys.* 4.6 213b2–29 tackles four related arguments, which concern locomotion, compression, growth, and the specific case of the ability of a container filled with ash to accept the same volume of water as a completely empty container of the same size. In his commentary on this passage (CAG 9, p.652.18–25 Diels 1882 = **28A**), Simplicius tells us that Strato reduced these four arguments to two, those regarding locomotion and compression respectively,²⁶ and added another of his own regarding magnetism. Elsewhere, Simplicius gives Strato’s reputed grounds for rejecting this last argument:

ταῦτα μὲν οὖν ὁ Ἀριστοτέλης πρὸς τοὺς ἱστορηθέντας ὑπ’ αὐτοῦ τιθέναι τὸ κενὸν λόγους ἀντείρηκεν· ὁ δὲ Στράτων καὶ τὸν ἀπὸ τῆς ἑλξεως αναλύων “οὐδὲ ἡ ἑλξις, φησὶν, ἀναγκάζει τίθεσθαι τὸ κενόν· οὔτε γὰρ εἴ ἔστιν ὅλως ἑλξις φανερόν (ὅτε καὶ Πλάτων αὐτὸς τὴν ἐλκτικὴν δύναμιν ἀναιρεῖν δοκεῖ) οὔτε εἴ ἔστιν ἡ ἑλξις, δῆλον, εἰ διὰ τὸ κενὸν ἢ λίθος ἔλκει καὶ μὴ δι’ ἄλλην αἰτίαν· οὐ γὰρ ἀποδεικνύουσιν ἀλλ’ ὑποτίθενται τὸ κενὸν οἱ οὕτω λέγοντες.” (*On Aristotle’s Physics*, CAG 9, p.663.2–8 Diels 1882 = **28B**)

These, then, are Aristotle’s replies to the arguments he recorded in favor of the void. Strato refutes also that from attraction, [saying] “neither does attraction compel us to suppose that there is void: for, [first], it is not clear whether attraction occurs at all (seeing that Plato himself thinks that he has done away with the attractive power), and [second], even if attraction occurs, it is not clear whether the lodestone attracts on account of the void rather than of some other cause. For those who argue thus do not demonstrate the void, but rather presuppose it.” (trans. Sharples)

We also have an explicit report that Strato, following Aristotle, did not think that void was required to explain motion generally. After criticizing Aristotle’s own putative counterexample as potentially restricted to cases in which bodies as a whole are in rotation in the same place, Simplicius offers (and endorses) an example he attributes to Strato instead:

ἀλλ’ ἴσως ἂν τις λέγοι τὰ τοιαῦτα μηδὲ κινεῖσθαι κατὰ τόπον καθ’ ἡμᾶς, ὅσα τὸν αὐτὸν φύλάττει τόπον κατὰ τὴν ὁλότητα, εἴπερ καὶ τὸν ὅλον

²⁶ He does not say for what reason Strato did not countenance the other two arguments, but Furley, 154, suggests that Strato may have seen these as cases of qualitative change which could not be reasonably supposed even *prima facie* to require the existence of void.

οὐρανὸν ἀκίνητον κατὰ τόπον λέγομεν· καὶ μέντοι ἐπὶ τοῦτων μόνων δόξει τὸ κενὸν μὴ εἶναι αἷτιον τῆς κατὰ τόπον κινήσεως τῶν κατὰ τὸ ὅλον ἐν τῷ αὐτῷ τόπῳ μενόντων αἰεί. προσφνέστερον οὖν ἐστὶ τὸ τοῦ Στράτωνος παράδειγμα ταύτας τὰς ὑπονοίας ἐκφεῦγον· ἐὰν γὰρ εἰς ἀγγεῖον τις πεπληρωμένον ὕδατος ψηφίδα ἐμβαλὼν καταστρέψῃ τὸ ἀγγεῖον ἐπὶ στόμα ἐπέχων τὴν ἔκροιαν, ἢ ψηφὶς ἐπὶ τὸ στόμα τοῦ ἀγγείου φέρεται ἀντιμεθισταμένου τοῦ ὕδατος εἰς τὸν τῆς ψήφου τόπον. τὸ δὲ αὐτὸ καὶ ἐπὶ τῶν νηχομένων συμβαίνει καὶ ἰχθύος καὶ οὔτινοσοῦν. ἐρεῖ δὲ καὶ αὐτὸς Ἀριστοτέλης πλείονα περὶ ταύτης τῆς ἀντιμεταστάσεως. (CAG 9, p.659.17–28 Diels 1882 = **29**)

Perhaps though someone might say that according to us those things do not move spatially which keep to the same place in their entirety, if we say that the heaven as a whole is unmoved spatially; and yet it is in the case of these things only, those that remain always in the same place in their entirety, that the void does not seem to be a [necessary] explanation of spatial movement. More suitable is the example [put forward] by Strato, which avoids these objections. If one puts a pebble into a vessel filled with water and turns the vessel upside down, stopping [any] outflow from its mouth, the pebble will move to the mouth of the vessel as the water exchanges its place [with it and moves] into the place [where] the pebble [was]. The same thing happens also in the case of things that swim, fish and whatever else it may be. Aristotle himself, too, will say more about this mutual replacement. (trans. Sharples)

To the extent that Strato's example is more broadly applicable, it is indeed preferable to Aristotle's original formulation, but its own force remains restricted to the claim that void at the level of macroscopic bodies is necessary to allow for locomotion. The fact that we do not observe voids occurring in the stated cases of pebbles, swimmers, or fish moving through water may constitute an effective argument against the claim that void at the level of macroscopic bodies is necessary for locomotion generally; however, no examples of this sort could hope to rule out at least the possibility of imperceptibly small voids within the water as the explanation for the observed phenomena, since these voids would themselves, *ex hypothesi*, be undetectable to our senses.²⁷ Thus Strato's stated position on the argument from motion is also compatible with his acceptance of microvoids.

Unlike the arguments from locomotion or magnetic attraction, an argument from compression is one that by its nature is better suited to the

²⁷ Cp. Furley, 154–55.

establishment of microvoids within matter rather than macro-, or massed, void between bodies. It is therefore particularly regrettable that Simplicius does not preserve any remnants of Strato’s position regarding the argument from compression, as he does with the other two arguments Strato is claimed to have addressed on the subject. Aristotle’s rather unimpressive responses to this particular argument in *Physics* 4 are of less interest for present purposes than the treatment of the phenomenon found in *Meteorology* 4.8–9, in which a theory of pores is introduced in order to account for at least some cases of compression. While it is stated explicitly that these πόροι need not be empty, only filled with some “softer stuff” than the surrounding matter, there is at least the suggestion as the text stands that they may indeed be void in certain cases.²⁸ There is no need here to take a position on the question of whether the fourth book of the *Meteorology* was written by Aristotle himself or is the work of a later Peripatetic, perhaps even Theophrastus. Suffice it to say that by the time Strato came to be head of the Peripatos, a reply to the argument of compression that used pores to explain the phenomenon, and perhaps even allowed that some of these could be void, had already been advanced within it. Why then would Strato himself reject the argument, as Simplicius at least seems to imply that he did? If he did indeed reject it,²⁹ I suggest that it may have been only on the narrow grounds that available examples of compression were insufficient to establish conclusively the need for actually void pores.

The fact remains that Strato is elsewhere explicitly credited with his own positive argument for the existence of microvoid (= **30A**). The inclusion of this argument in Simplicius’ report seems to me to add great weight to his attribution to Strato of such a theory. The details of that argument merit closer examination.

But Strato of Lampsacus tries to show that void divides the whole of body, so that it is not continuous, saying “Neither light nor heat nor any other bodily power would be able to pass right through water or air or another body [if this were not the case]. For how would the rays of light pass right through to the base of a vessel [of water]? For if the liquid did not have pores, but the rays divided it by force, the result would be that full vessels would overflow, and it would not be the case that some of the rays would be reflected upwards, while others pass through below.” (**30A** [in part])

²⁸ See esp. Arist. *Meteor.* 4.9 386b2–8.

²⁹ Furley, 155, notes that Simplicius “does not actually say anything that entails Strato’s rejection of the compression argument.”

One of the first things worth noting about the argument is the conception of light involved. Aristotle himself explicitly denies that light is a body in his treatment of the subject in *On the Soul* 2.7. The view that light was corporeal was not, however, restricted to the Epicurean school, by which Wehrli, for example, thought Strato had clearly been influenced. There is even some evidence that considerations on the reflection of light and developments in theories of vision may have prompted a re-evaluation of Aristotle's position within the Peripatos prior to Strato.³⁰ Whatever Strato's inspiration, it is clear both that one of his primary concerns regards the way in which light is reflected and that his argument yields the proper conclusion only if light is conceived of as a body. On the assumptions that light is corporeal and that no pores or void existed within the liquid in the container, one would reasonably expect the same effect in every case where light met liquid: either total penetration of the latter by the former (in which case one would also expect some liquid to spill out of the putatively full container) or the reflection upwards of all the light as it strikes solid body and is repelled. What one would not expect is what is in fact observed, namely, that some of the light penetrates through the liquid; some of it gets reflected back; and none of the liquid spills out. Hence, as the argument has it, the need to posit the existence of microvoids within the liquid itself.

A theory of purely potential void of the sort advocated by Gatzemeier appears incapable of resolving Strato's puzzle without avoiding a devastating charge of arbitrariness, as D. Furley has convincingly argued.³¹ On the one hand, if these potential pores were, as Gatzemeier himself seems to think, akin to fissure lines in the existing matter (i.e., definite points at which the liquid can split to allow for the penetration of light), an explanation of why they occur only in certain places rather than others would be necessary. If the liquid in Strato's example were held to be homogeneous throughout, what would explain the fact that some bits of it yield to allow light to penetrate while others do not? It will not do to maintain that the liquid is in principle equally subject to yielding in all points (i.e., that every part of the liquid within the container is equally capable of being penetrated by light), but that on any given occasion it just so happens to be penetrated only in some points and not others. Such a move not only fails to offer any

³⁰ See, e.g., Berryman, 1998, 176–96 (esp. 183–86).

³¹ See Furley, 152–53, from which the considerations in this and the following paragraph are mainly derived.

response to the initial question as to why this should be the case, but it also suggests an entirely new quandary: Why then is light never observed penetrating water in the way a swimmer, or a fish, does; i.e., in one large mass passing through the center of the glass in a single, observable channel?

One possible alternative would be to abandon homogeneity altogether, and to appeal to, for example, a pore theory along the lines of one suggested by *Meteorology* 4.8–9, in which the pores are filled with some thinner, softer, more pliant material rather than being void. But such a move would require positing a similarly thinner, softer, more pliant "filling" for the pores of any substance capable of being penetrated, which in certain cases (e.g., air) seems either implausible or hopelessly *ad hoc*. In the end, only the solution of pores that are actually void suffices to avoid this series of related objections while still preserving the observed phenomena. Or so at least the surviving evidence makes it reasonable for us to conclude that Strato himself believed.

There is nothing in this scant body of evidence, I have argued, that would justify rejecting Simplicius' direct and comparatively detailed attribution of a microvoid theory to Strato. Acceptance of such a theory may make Strato seem uncomfortably "heterodox" for a head of the Peripatos. It is, however, questionable what value such a label can have when discussing a community as committed to active philosophical and scientific research as we know the Peripatos to have been. In any event, Strato's differences with Aristotle on this point would surely be no greater than those the related evidence reveals on the subjects of place, the nature of light, or, perhaps, even the explanatory power of pores, whether void or not.

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6

The Evidence for Strato in Hero of Alexandria's *Pneumatics*

Sylvia Berryman

I

Twentieth century scholarship on Strato of Lampsacus' matter theory has been dominated by Hermann Diels' proposal that the introduction to the *Pneumatica* of Hero of Alexandria is substantially Strato's work. In an article published in 1893, Diels noted that Hero's introduction (**30B**) duplicates, virtually word-for-word, an argument that Simplicius attributes to Strato for the presence of *poroi* or passageways throughout matter (**30A**). Diels conjectured that not only this particular argument, but almost the entire introduction to Hero's *Pneumatics*, is based on Strato's essay "On the Void."¹

If this bold conjecture is accepted, it would give rise to a markedly different picture of Strato from that which is available in those reports that mention him by name. The idea that Strato countenanced the presence of pores — presumed to be void — throughout matter has been taken to imply a significant departure from Aristotelian theory. In the face of the scant evidence for Strato, the inclusion of material from Hero has coloured his philosophical

¹ Diels (1893) 101–27.

reputation considerably. Diels' claim that Strato's work represents a "compromise" between Aristotle and Democritus has given rise to the notion that Strato was an eclectic, adopting elements from various views.²

Scholars have both questioned and defended Diels' conjecture. The picture that emerges if Hero's work is taken to be by Strato has been explored in depth in the twentieth century, particularly in the work of Hans Gottschalk.³ There has been less consideration of the picture which emerges of Strato's ideas if we do not ascribe to him the bulk of Hero's introduction. Because Diels' conjecture has so dominated twentieth century scholarship on Strato, the case for reconsideration is worth spelling out.

The parallels in the specific passage noted by Diels are unmistakable, but other borrowings in Hero's introduction suggest that Hero is—as he indeed states — drawing on multiple sources.⁴ The mention of Archimedes at the end shows, minimally, that the entire piece cannot be by Strato; thus, ascribing to him any more than the passage duplicated in Simplicius is a matter of judgement about what views Strato is likely to have held. This is a risky business, given how little we know of Strato's views otherwise.

Moreover, there are serious inconsistencies in Hero's work. These inconsistencies, I shall argue, are the main problem with Diels' complex reconstruction of a philosophical position that is then traced back to Strato: there are no grounds for proposing a unique philosophical pedigree for a work that is in fact a cut-and-paste creation from other known sources. Although this disappointing conclusion may seem merely negative, leaving us with less information about this little-known philosopher, it helps clear the ground for consideration of Strato as a natural philosopher working against a recognizably Aristotelian background.

II

Diels treats the introduction of Hero's *Pneumatica* as the central piece of evidence, and reads it as a single and consistent theoretical explanation of pneumatic effects. Taking Hero's introduction to present a unified theory, Diels argues that it is also substantially that held by the Hellenistic engineers Philo of Byzantium and Ctesibius, and the Hellenistic doctor Erasistratus. He takes Strato of Lampsacus to be its originator. Hero lists three claims at the end of his Introduction:

² Diels (1893) 106; Claggett (1955) 69; Wehrli (1950) 56; Lloyd (1973) 19.

³ Gottschalk (1955); (1965); (1976) 91–95. More recently, it has been defended by Lehoux (1999) against criticisms by Furley (1989) and Berryman (1997).

⁴ Schmekel (1938) 110–24; Capelle (1931), col. 293; Gatzemeier (1970) 28; Furley (1989) 157–58; cf. Repici (1988).

- 1) that all bodies are composed of particles with smaller void spaces between;
- 2) that to the extent that some particles flow out, others follow to fill the emptied place; and
- 3) that amassed void does not exist in nature, although it can be created artificially.⁵

Diels seems to take the conjunction of these three claims to constitute a “compromise” position on the void, distinct from either of the two prevailing alternatives, atomism and continuum theory.⁶ Given that Strato is known for being a revisionist and that he argued for the presence of passageways or pores throughout matter, then — assuming that these passageways were thought to be void — Strato seemed to Diels to be a likely source.

Diels’ complex argument thus depends on a number of assumptions. One of them is that the three claims mentioned by Hero are intended to constitute a distinct new theory, and one that is shared by other Hellenistic authors. The combination of claims are taken together to distinguish this position from both Aristotelian continuum physics and atomism, constituting a “microvoid” theory. Another is implicit in Diels’ use of the medieval Latin tag *horror vacui* to describe the second claim, that matter flows in to refill an emptied place. Although the second claim only describes an effect, the term *horror vacui* is sometimes read as referring to an explanation of this effect.⁷

Hero himself, significantly, only distinguishes two alternative kinds of matter theory and not three: he contrasts those who deny that there is any void, and those who say that it is found naturally in a scattered, but not an amassed, form.⁸ This indicates that Hero did not see himself as articulating

⁵ *Pneumatica* 28.1–11 (Schmidt); cf. Gottschalk (1965) 127.

⁶ Diels (1893) 110.

⁷ Diels seems to read Hero’s demonstrations as *proving a theory*, not as showing that there is *an effect to be explained*: “Wie die Sandkörner Luft zwischen sich enthalten, so enthalten die Molekeln der Luft selbst Leeres zwischen sich. Daher die Elasticität, daher der horror vacui. Erstes Experiment: Saugt man aus einer enghalsigen kleinen Flasche die Luft aus, so bleibt sie an die Lippen hängen. Das Leere zieht das Fleisch an . . .,” Diels (1893) 107. Lehoux (1999) 24–25 defends the idea that *horror vacui* may be *explanans* if an author offers other reasons why matter rushes in. However, it seems that the other reasons would be the *explanantia* in that case, and it is never clear what the Latin label refers to in addition. It is better set aside.

⁸ *Pneumatica* 4.2–6. Diels’ reasoning for claiming that the distinction between amassed and scattered void amounts to a new theory distinct from atomism is that such a distinction, and some terminological parallels, are found in the physician Erasistratus. The evidence for Strato includes both assertions that he denied the existence of void, and other claims that he affirmed it.

a view distinct from atomism, nor suppose that the idea that void spaces refill was enough to demarcate a distinct theory. Nor need he have thought the second claim would distinguish his view from atomism. There was much discussion, dating back to at least the fourth century, around the fact that large void spaces tend to refill. The atomists — including, I have argued, Democritus — have their own explanation as to why this occurs. While classical atomists do not seem to have made the kind of distinction expressed in claim three, they could well have accepted it as a general truth about the part of the cosmos we experience.

What I shall call “rarefaction effects” form the bulk of the field that came to be known as pneumatics in the Hellenistic period. Several fourth-century texts also discuss motion “towards a void” or “by the void” or “to prevent a void.” In the simplest cases, water is suspended in a clepsydra or flows uphill in a siphon; the Greek *pneumatica* treatises elaborate increasingly complex devices exploiting these effects to produce marvellous devices like surprise vessels, fountains, water-organs and pumps. These phrases merely acknowledge widely known effects;⁹ philosophers from different schools can agree on the existence of the “power of the void,”¹⁰ without agreeing as to how it is to be accounted for.

Claim two, then, does not stand as evidence of a particular theory. Hero in fact sometimes offers the impossibility of amassed void as *explanans*, at other times as *explanandum*. Moreover, Hero offers several different, apparently incompatible ways to account for rarefaction effects. Diels tried to read Hero’s introduction as a new, consistent theory of the void based on fine distinctions between micro- and macro-void, and naturally occurring vs. artificially created void. While Hero is prefacing a body of work on artificial devices that flowered in the Hellenistic period, his explanations of rarefaction effects are substantially those available in the fourth century. On my interpretation, he is simply citing different, well-known and incompatible views, without much regard for consistency. This is a difficult interpretation to establish definitively, as it involves assumptions about what degree of consistency is reasonable to expect, and challenges some notions of interpretative charity. However, I suggest that the tensions within the treatise, and the evidence of multiple borrowings, makes Diels’ bold conjecture ultimately implausible.

⁹ I argue this in Berryman (1997).

¹⁰ Philoponus in *Phys.* 569.18; 570.17.

III

Hero, I suggest, cites all known explanations of rarefaction effects, apparently without recognizing that they depend on conflicting assumptions about the nature of matter. In a central passage, the structure of matter is compared to that of grains of sand on a beach with air pockets between; by analogy, particles of matter leave pockets of void space between. Hero details a respectable account of why it is that an artificially created void space tends to refill: the motion of bodies is quicker in a void, because nothing opposes or hinders them, until the bodies are touching one another.¹¹ This is a classic atomist argument, found in Lucretius; Furley noted its presence in Epicurus, and I have since argued that it is also traceable to Democritus.¹² Thus far there is nothing new: atomists concede that amassed void spaces are not visible within the cosmos, and use the 'drift' of atoms into emptier spaces to explain why larger void spaces, once created, tend to refill.

However, this is not the only account of rarefaction effects that Hero offers. When it comes to the uphill motion of water in a siphon, Hero's claim is not that a void forms artificially and then refills because of the unimpeded motion of the atoms, but that the water is pulled along by the air *because of the continuity of the water*.¹³ Continuity is at least a necessary condition, and apparently the explanation, of the working of siphons in other passages.¹⁴ This could only be compatible with the particle theory mentioned above if there were some additional cohesion of the particles when they are in contact, a cohesion that is not impeded by the presence of scattered void spaces.¹⁵ It is hard to see how a "continuity" account could be reconciled to a particle theory like atomism, especially as he had mentioned no interlocking barbs locking together the particles. Rather, Hero seems to be quoting a different account altogether of pneumatic effects here — one found in some Peripatetic texts — where "continuity"

¹¹ *Pneumatica* 8.9–16.

¹² Furley (1989); Berryman (1997), (2002b). Lehoux (1999) 18–19 argues against Furley's discovery of the "drift" notion in Epicurus because Epicurus is making a somewhat different use of it; I do not think that this undermines Furley's point, nor that Aristotle originated the idea that void offers no resistance to motion. See Sextus Empiricus *AM* 10.221; Sambursky (1959); O'Brien (1981) 167. Lehoux's remarks about Erasistratus are worth noting, however.

¹³ διὰ τὴν συνέχειαν, *Pneumatica* 34.26.

¹⁴ *Pneumatica* 242.2–4; 292.13.

¹⁵ Drachmann (1948), defending Hero's coherence, denies that the reference to the "continuity" of water is meant to refer to "glueing," but merely to show that the water in the siphon can't have water pockets interspersed.

or *sunecheia* is said to be explanatory of rarefaction effects, since it prevents the formation of void.¹⁶

The picture is further complicated when Hero adds a third kind of explanation for the case of the person starting a siphon by suction. In this case, the Platonic explanation is pressed into service. The reason why wine is drawn up into a siphon when the person sucks out air from one end is said to be that the person intaking air becomes fuller and presses on the surrounding air, setting up a sequence that creates a rarer zone at the surface the wine, so that it is driven up into the siphon from below.¹⁷ How the circular pressing works through the walls of the container holding the water is never explained; we are told merely that the only place for the wine to move is upward into the void space created.¹⁸ The explanation of attraction called *antiperistasis* or circular mutual replacement is used by Plato in *Timaeus* to argue that there is no such thing as *helxis*, the attraction or pulling of matter: cases of apparent attraction like the pulling of air into the lungs should rather be explained by circular currents that result in the air being pushed from behind. Hero seems to be borrowing this account and applying it to a situation where it is not obvious that it will work.

Besides saying that bodies *drift* in to refill a void because they encounter no resistance, claiming that the continuity of matter *pulls* bodies along to prevent void from forming, and claiming that circular currents *push* from behind causing upward movement, Hero is not above claiming outright that *void* draws matter in to refill the emptied place.¹⁹ How this works is left unclear. He says here that a void space is formed and that the void draws in the flesh to refill it: this is hard to reconcile with the view that rarefaction effects are explained by circular pushing, not pulling, or that the continuity of matter acts to prevent void from forming. Nor is this the same as the claim that atoms drift into the void space because there is no resistance. If anything, it seems to echo the Hippocratic acceptance of attraction as an irreducible property ascribed to certain organs.²⁰

The different explanations are in tension throughout the introduction, a tension that is never acknowledged or resolved. Hero cites the *impossibility* of amassed void existing as the reason why water follows into a

¹⁶ See Furley (1989) 157; Berryman (1997), (2002a).

¹⁷ *Pneumatica* 37.23ff.

¹⁸ καὶ τότε ὁ οἶνος θλινόμενος εἰς τὸν κενούμενον τοῦ σίφωνος τόπον χωρήσει, *Pneum.* 38.4–5.

¹⁹ ἐπισπώμενου τοῦ κενοῦ τὴν σάρκα πρὸς τὸ ἀναπληρωθῆναι τὸν κενωθέντα τόπον, *Pneumatica* 8.19–21.

²⁰ See Berryman (1997).

siphon,²¹ although he has freely admitted that void *can* be created artificially in the very similar case of someone sucking on a straw. Both cases are artificial; no attempt is made to distinguish them, or to say why void is impossible in one case, yet exists in another. Nor is there any attempt to say how small and large void spaces differ: if it is only that larger ones tend to refill by drift, we are back with classic atomism. If the idea is that the amount of void that can exist *within* bodies is somehow restricted by the need to retain the continuity of the body, then some account of this is needed.

A fifth apparent account of the motion of matter against its natural tendency is found in the account of the *diabêtês*, an inclosed siphon where water is drawn up and then down through a central spout. The explanation stresses the greater length of the downward spout, and says that the attraction comes about because of the greater depth of the spout.²² There is a reference here to the idea of weights held in balance.²³ Still, this may not be intended as a complete explanation: the idea that the quantity of water in the upward and downward arms of the siphon is in equilibrium or imbalance appears elsewhere, but in conjunction with a claim about continuity of matter.

Hero's compilation might fairly be described as "eclectic" in the perjorative sense of the term, since it seems to be borrowing arguments haphazardly without a coherent philosophical view of the nature of matter. Other scholars have recognized that the account draws on different sources: Hall oddly describes it as "an essentially Aristotelian theory of matter which takes cognizance of the advantages of atomism in explanation of many physical phenomena."²⁴ Drachmann, who defends Hero against Hammer-Jensen's criticisms with respect to Hero's understanding of his *devices*, recognizes that some theoretical commitments are borrowed from different sources.²⁵

If there were some way to reconcile these disparate elements into a coherent theory, Hero certainly does not tell us what it is. What Hero seems to want from natural philosophy is some way to make sense of the fact that masses like air can at times act in ways we would expect of solid bodies: pressing on hinges firmly enough to prevent them opening, or supporting

²¹ συνεπακολουθήσει καὶ τὸ ὑγρὸν διὰ τὸ μὴ δύνασθαι, ὡς προείρηται, κενὸν ἄθρουν ὑπάρξει τόπον, *Pneumatica* 30.6–7; cf. 46.3–4.

²² *Pneumatica* 42.14, reading *bathei*: Hero has explicitly rejected the idea that the greater weight of water, rather than the position of the pipe, is responsible. A similar account of a siphon later shows that the greater downward position of the pipe is credited with drawing water, *Pneumatica* 146.11–12.

²³ *Pneumatica* 30.12–15; Drachmann (1948) 94.

²⁴ Hall (1971).

²⁵ Drachmann (1948) 91. Its coherence is defended by Gottschalk and Lehoux.

from below a column of water. To this end, he is happy to draw on any explanations available. The distinction between the natural and the artificially created situation may be intended to do some work, but this is not clearly worked out. As many of the disparate elements are identifiable as explanations employed by different schools of thought, it is most likely that Hero is, as he himself claims, simply borrowing from a variety of sources among “the ancient philosophers and mechanics.”²⁶ Thus, there are no grounds for supposing, merely because echoes from Philo, Strato or Erasis-tratus are found in Hero’s work, that they all share a similar theory, or even that the Hellenistic period saw the emergence of a new position on rarefaction effects. These are old hat.

Diels’ interpretation connects Hero’s theory to Philo of Byzantium. Philo’s view is not easy to discern, both because of the difficulties of the manuscript tradition and because it is not always clear when Philo is *endorsing* a view he mentions. Philo begins his discussion of void with the claim that *some theorists* hold that air is composed of particles too small to see, while one theorist says that there is void mixed with the particles of air and other bodies.²⁷ In the translations from the Arabic, it is presented as a conclusion of *these* philosophers that water and air are naturally joined and leave no distance between them.²⁸ In the Latin, after quoting the wise, Philo offers in his own voice a demonstration that the substance of air and water are continuous and allow no distance between them.²⁹ An explanation of the drawing up of water by rising air in a siphon is offered a little further on: water is drawn up since it coheres with the air as if held by glue or some other bond.³⁰ Later, Philo says explicitly that rejecting the void is necessary to explain pneumatic effects. In Prager’s translation from the Arabic:

What we explain here is one of the foundations of the science called pneumatics, which is based on such devices. It occurs only because there can be no void. When air is removed, one of the other bodies, coherent with it, takes its place. They are simply pushed naturally. Such is the opinion of several teachers of natural science, and we agree.³¹

²⁶ τῶν παλαιῶν φιλοσόφων τε καὶ μηχανικῶν, *Pneumatica* 2.5.

²⁷ Philo *De Ing. Spir.* 462.16–25.

²⁸ Prager (1974) 130; de Vaux (1903).

²⁹ Philo *De Ing. Spir.* 463.27ff.

³⁰ *tanquam ei cum visco applicaretur vel alio huiusmodi ligamento*, Philo *De Ing. Spir.* 464.17–19.

³¹ Prager (1974) 135. The Latin makes no reference to the science of pneumatics, but is equally emphatic that there cannot be any void space: *nec fit hoc nisi quia locus vacuus esse non potest*: Philo *De Ign. Spir.* 476.5.

However, as Lehoux notes, Philo talks of interspersed void elsewhere in a different context.³² There are other apparent inconsistencies: he explains why air is drawn upward by claiming that air and water are continuous and united like glue, yet earlier in the same problem we are told that water can move upward in a siphon because no air is interspersed to interrupt the continuity of water.³³ We are not told why in this situation the interspersal of air would threaten the continuity of water, while earlier water and air are said to be glued together. The echoes in Philo's jumbled text are hardly evidence that Hero held a coherent philosophical view.

IV

Hero is evidently drawing on various standard theories to explain rarefaction effects, without looking too closely at their compatibility. However, he quietly introduces a newer issue, and with it a theory of matter that may be his own. In addition to rarefaction effects, he describes a distinct phenomenon involving air unnaturally compressed into a smaller space than it would normally occupy. This compressed matter regains its original volume in a sudden and forceful manner. Compression effects were not considered by the classical theories of matter; the Hellenistic engineer Ctesibius seems to have first discovered and exploited them, using them in the construction of both ballistic and pneumatic devices.³⁴ Philo, who described these compression effects some centuries before Hero, reports that Ctesibius recognized that the air is both *eutonos* and *eukinêtos*;³⁵ i.e. able to produce powerful effects by virtue of its compressibility. However, Philo offers no *explanation* of Ctesibius' compression effects, beyond the claim that powerful and sharp motion is a natural to the air,³⁶ and that compressed air *desires* to regain its natural state.³⁷

By contrast, Hero of Alexandria does seem to offer an account specifically adapted to explain compression effects. While it shares Philo's notion that there is a natural elasticity or *eutonia* to certain materials, Hero uses the concept of elasticity not merely to characterize a macroscopic phenomenon, but as a theory of the microstructure of matter which will account

³² Philo *Bel.* 71.27–31; Lehoux (1999) 29.

³³ *De Ing. Spir.* 472.29–30; cf. 464.14ff; 472.4–8.

³⁴ Philo *Bel.* 77.27; Athanaeus *Deipn.* 14.174Bff.

³⁵ Philo *Bel.* 77.13–14; Marsden (1971) 153.

³⁶ ἐπεδείκνυτο δὲ ἡμῖν ὁ Κτησίβιος παραδεικνύων τὴν τε τοῦ ἀέρος φύσιν, ὡς ἰσχυρὰν ἔχει καὶ ὀξεῖαν κίνησιν, *Bel.* 77.29–30.

³⁷ . . . τὴν ὄρεξιν ἔχοντα τὴν κατὰ φύσιν ὑπάρχουσαν αὐτῷ κατάστασιν, *Bel.* 78.19–20.

for the observed effects. His explanation of how void spaces explain the compression of matter exploits this new property of elasticity:

The particles of the air are in contact with each other, yet they do not fit closely in every part, but void spaces are left between them, as in the sand on the sea shore: the grains of sand must be imagined to correspond to the particles of air, and the air between the grains of sand to the void spaces between the particles of air. Hence, when any force is applied to it, the air is compressed, and nonnaturally falls into the vacant spaces from the pressure exerted on its particles: but when the force is withdrawn, the air returns again to its former position because of the elasticity of its particles, as is the case with horn shavings and sponge, which, when compressed and set free again, return to the same position and exhibit the same bulk.

τὰ δὲ τοῦ ἀέρος σώματα συνερείδει μὲν πρὸς ἄλληλα, οὐ κατὰ πᾶν δὲ μέρος ἐφαρμόζει, ἀλλ' ἔχει τινὰ διαστήματα μεταξὺ κενὰ καθάπερ ἡ ἐν τοῖς αἰγιαλοῖς ψάμμος. τὰ μὲν οὖν τῆς ψάμμου μόρια τοῖς τοῦ ἀέρος σώμασιν ἀποκείουσθαι ὑποληπτέον, τὸν δὲ ἀέρα τὸν μεταξὺ τῶν τῆς ψάμμου μορίων τοῖς μεταξὺ τοῦ ἀέρος κενοῖς· διὸ καὶ πιεῖσθαι τὸν ἀέρα συμβαίνει ἐκ βίας τινὸς προσελθούσης καὶ συνιζάνειν εἰς τὰς τῶν κενῶν χώρας, παρὰ φύσιν τῶν σωμάτων πρὸς ἄλληλα θλιβομένων· ἀνέσεως δὲ γενομένης πάλιν εἰς τὴν αὐτὴν τάξιν ἀποκαθίσταται τῇ τῶν σωμάτων εὐτονίᾳ, καθάπερ καὶ τοῖς τῶν κεράτων συμβαίνει ξέσμασι καὶ τοῖς ξηροῖς σπόγγοις, ὅταν συμπιληθέντα ἀνεθῇ, πάλιν ἐπὶ τὴν αὐτὴν χώραν ἀποκαθίστασθαι καὶ τὸν αὐτὸν ὄγκον ἀποδιδόναι.³⁸

At first glance, this might seem familiar. Aristotle had discussed an atomist argument to the effect that if a certain quantity of, say, steam is able to condense into a kettleful of water, this must be because there were void spaces available into which the particles of matter condense. This type of explanation requires that the void spaces in air be considerable, i.e. the kind of space one might expect to find between freely moving atoms in mutual collision, not merely the unfilled spaces remaining between close-packed particles that are in contact. Because Hero claims that the particles of air *are already in contact* before they are compressed, he cannot be relying on the account Aristotle cites. He says that the particles are squeezing against one another in a way that is *para phusin*, not according to nature. This can't be simple closer-packing of atoms under crowding.

The idea seems to be that the particles — already close-packed — are elastically *deformed* so that they can pack closer together. Round elastic

³⁸ *Pneumatica* 6.23–7.10; translation by Greenwood (1971) 2–3, slightly modified.

particles could pack closer together if they are compressed so as to fit into the empty spaces, becoming in effect a closer-packed cubic array. The volume of the particles does not change, but a change in shape from spherical to cuboid allows for closer packing, and hence a change in the volume occupied by the whole array. Apparently, in violation of atomist strictures, Hero is claiming that the particles fill up the void gaps by deforming from their natural shape. The sponge comparison could be misleading, but the horn shavings show this idea more clearly without the suggestion that empty spaces are involved.

The problem is not only to explain the closer-packing of a given volume of compressed air, but to account for the sudden and violent expansion of the air to its former volume when the pressure is released. Hero says that when the unnatural pressure is removed, the particles return to their former arrangement, *taxis*: this happens because of the elasticity, *eutonia*, of the particles.³⁹ It is because the particles themselves are unnaturally deformed under pressure that they spring back forcefully. Nothing in the atomist account of compression would account for this sudden force which occurs on release, instead of a gradual drift back into the unoccupied space. Thus, Hero offers, I suggest, a new view of matter, developed to explain the sudden and violent tendencies of Ctesibius' compression effects which can shoot a stream of water upward or fire a catapult.⁴⁰ None of the explanations of rarefaction effects — drift, continuity, circular mutual replacement or bare attraction — could produce this violent reaction. Just as the elasticity of sinew, horn and steel is considered by Philo in the context of ballistics, the elasticity of air particles is offered as a new theory accounting for the recently discovered "spring of the air."⁴¹

Readers of Hero seem to have misunderstood his account. Some have noted the Stoic resonances of the term *eutonia*, as if to suggest that Hero is merely referring to some overall property giving the entire mass of air particles a particular form and volume, without really showing how.⁴² But given that the closer-packing of particles already in contact seems to

³⁹ τῇ τῶν σωμάτων εὐτονίᾳ, i.e. making elasticity a property of the individual particles, not of the mass of matter as a whole.

⁴⁰ Gottschalk (1965) 130 notes Ctesibius as a source for the 'experiment,' but not its implications for matter theory.

⁴¹ In my (2009), I argue that this ability to recoil is a new property of matter, not recognized in fourth century matter theory, but brought to philosophical attention by the mechanical research of the third century. The property is evident in the Peripatetic *de Audibilibus*, which may be Strato's.

⁴² As, say, Furley (1989) 158, reads it. I suggest elsewhere that the Stoic introduction of the concept of *eutonia* in the third century rather owes something to mechanics.

involve deformation, it is much more likely that he uses *eutonia* to refer to the deformability or elasticity of individual particles. *Eutonia* would thus explain the suddenness of the restoration and the fact that the particles of air seem to be reassuming a precise natural dimension, not merely drifting apart gradually as a result of collisions. In addition to his compilation of all known accounts of rarefaction effects, Hero seems to be explaining a property of matter brought to light by the compression effects Ctesibius discovered.

V

Diels reads Hero's introduction as epitomizing a Hellenistic tradition essentially borrowed from Strato of Lampsacus. The evidence for this attribution rests on the argument about the passageways for light: there is no other independent evidence that Strato held a particle theory of matter. The argument in question is reported by Simplicius to be Strato's view: that there must be passageways throughout all transparent matter like air and water, to allow for the passage of "light and heat and other corporeal powers," although the discussion focuses only on light. It claims that rays of light could not pass through otherwise: if the light went through by force, one would expect overflow, and it wouldn't be the case that some rays were bent back while others went through. The presence of differential passageways in water would show why light is both reflected from water and passes through it.⁴³ For this to be possible, the view must be that straight-line passageways criss-cross the structure. Presumably they could not be so numerous as to compromise the integrity of air and water.

This view is difficult to reconcile with other claims by Hero about the nature of matter. Strato's argument for passageways presupposes a basically continuous material perforated by straight-line passages. This is quite

⁴³ There is a controversy among interpreters of Strato's views as to whether the passageways need to be void: Simplicius clearly thinks they must be, but there is room for the possibility that it is *Simplicius'* inference that this is what *Strato* thinks: see Furley (1989) 151. Lehoux (1999) 10–11 rightly takes me to task for putting this point incorrectly in Berryman (1997). Furley (1989) reasons that Strato's passageways must be void, to permit the passage of light without forcing out other material. This assumes that light occupies space. While most ancients take light to be either a body occupying space or a quality of a body, there is a view available about Strato's time, from the *Optics* ascribed to Euclid, which understands vision by means of dimensionless lines connecting eye to object. It is at least plausible that this is how light was understood. For the idea that *poroi* in Aristotle's theory of matter may refer simply to "lines of greater susceptibility," see Olympiodorus, *In Meteor.* 313.25; 325.3–4; Gottschalk (1961).

different from Hero's view that void spaces are interspersed between discontinuous particles packed together so as to touch one another like grains of sand on a beach. The interspersed spaces left behind in a close-packing of particles Hero describes would not permit the straight-line passage of light. Sand, after all, is not transparent. The one proof Hero borrows from Strato is at odds with the first claim of what Diels takes to be Hero's view.

There is very little reason, then, to suppose that Hero's introduction is substantially that of Strato of Lampsacus. The main explanations of rarefaction effects are all documented before Strato's time, while Hero's account of compression effects, not found in Philo, may well be new. The introduction as a whole, I have argued, does not represent a coherent theory, and so the argument for seeking its philosophical pedigree is moot. As it offers incompatible explanations, the most obvious interpretation is that it draws on different sources, as indeed it claims to do. Although interpretative charity would urge caution here, it should not preclude us from recognizing when an author is simply citing different authorities — as Hero tells us he is doing — without trying to reconcile them into a single matter theory.

What Strato meant by allowing that there are *poroi* throughout matter to permit the passage of light, and whether we need to accept the claim that these passageways are void, is a different question. Diels distinguishes between micro- and macro-void, in order to try to reconcile the conflicting reports of Strato's views on void; I have been suggesting that the apparent support for this interpretation from the tradition of pneumatics is illusory. The distinction between potential and actual void space — later canvassed by Philoponus — is another attempt to reconcile the conflicting claims about Strato's views.⁴⁴ There are undeniable difficulties with this line of interpretation too. But only confusion results from attempting to ascribe any more of Hero's Introduction to Strato than the single passage attested by another source. Before we can begin to understand Strato's theory of matter, Diels' conjecture needs to be set aside.

⁴⁴ See Schmekel (1938) and Gatzemeier (1970), discussed in Gottschalk (1965) and Furley (1989). For Philoponus' arguments for potential void, see Sedley (1987).

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Elemental Qualities in Flux

A Reconstruction of Strato's Theory of Elements

Paul T. Keyser

I

Among the fragments of Strato are some which suggest that he held a non-standard theory of elements, in which qualities of some kind were elemental. The few explicit testimonia in Wehrli, all probably doxographic, mention only “Hot” and “Cold”— and perhaps “Thick” — among those elemental qualities, but there are good reasons for believing that his theory promoted a wide variety of qualities to elemental status, probably including colors and flavors. Moreover, the theory reconstructed here can clarify a handful of other fragments.

First, let me briefly review the explicit testimonia, the doxographical scraps **45–48, 52–53**. Sextus Empiricus, *Hypotyposes* 3.33, the pseudo-Galenic *History of Philosophy* §18, and later sources, say that according to Strato the elements, *archai*, are the qualities, *poiotētas* (**45**).¹ At a guess, these testimonia derive from the tradition of Sotion and Heracleides Lembos. On the other hand, Aëtios in Stobaeus provides two testimonia, first

¹ Cf. Wehrli, pp. 54–55; cf. Gatzke-Meier (1970) 118–22.

(46), that the elements, *stoicheia*, are Hot and Cold,² and second (52) that an excess of warmer matter causes *prestēr* (hurricane), while an excess of thicker (*pachu*) matter causes *tuphōn* (whirlwind).³ Thickness might seem unlikely as a quality in Strato, if we presume that he explained thickness using the relative density of pores and matter (cf. 30). But my conclusion will reopen the possibility that the “Thick” was one of Strato’s elemental qualities. Epiphanius, *De Fide* 9.37, probably employing Aëtios or an intermediary, says that Strato made Hot (*thermēn ousian*) the cause of everything (47), which may refer to heat as an active agent, but surely cannot be taken to mean that Strato was a monist.

The last two of these doxographical scraps detain us only a little longer. Seneca, *QN* 6.13.2–4, in offering theories of quakes that can be made to conform to the Stoic model, cites Strato as saying that Cold and Hot exchange with one another. The evidence for this, he says, is that (some) caverns are relatively warmer in winter and cooler in summer (53), and Seneca concludes that such exchanges cause winds which then cause quakes. Finally, Plutarch, *Princ. Cold.* 9 (948CD), claims that Strato placed the substances of the qualities (*dunameis*) among the perceptibles, and ascribed the cold quality to water (48).

Thus for explicit testimony we have only Hot and Cold, and possibly Thick (*to pachu*) as elemental qualities. *A priori* that does not seem adequate as a theory of elements — but then, *a priori*, neither do rarefaction and condensation of air (which is reliably attributed both to Anaximenes and to Diogenes of Apollonia), nor *a priori*, for that matter, do the standard four elements Fire, Air, Water, and Earth seem adequate. *A priori* arguments can not take us very far.

II

For the concept of elemental qualities, Wehrli compares Anaxagoras, Diogenes of Apollonia, and the Hippocratic *Ancient Medicine*, and it is that clue that I would now like to follow up and extensively augment. The four-element theory of Empedocles, which eventually became standard because Plato and Aristotle had adopted it, was not yet universal in Strato’s lifetime, and was always rejected by atomists, who taught that Fire, Air, Water, and Earth were merely four of the myriad kinds of atoms. Moreover, elemental theories were always close cousins of humoural theories, by an analogy at

² Aëtios 1.3.24 (p. 288 D.) = Stobaeus *Ecl.* 1.10.12.

³ Aëtios 3.3.15 (p. 370 D.) = Stobaeus *Ecl.* 1.29.1.

first direct and then mediated through the microcosm/macrocosm analogy.⁴ I.e., theories of elements were introduced to explain the *kosmos* or the body or both, and no strict separation of “elemental” and “humoural” theories can be made (cf. Plato’s remark on Hippocrates in *Phaedrus* 270c). That is the larger, and even immediate, context of Strato’s theory, and it is therefore important to review that context, to show just how manifold and non-standardized it was. Finally, as will be seen, many of the specific substances posited as elements or humours in those earlier theories will reappear in the closest parallel to Strato’s theory.

Before — and after — thinkers counted to four elements, they counted sometimes to one, sometimes to two, sometimes to many. Monists of course denied any fundamental character to the four phenomena Fire, Air, Water, and Earth. Anaximenes produced from air alone his six or more secondary substances fire, wind, cloud, water, earth, and stones,⁵ as did later Diogenes of Apollonia, explicitly denying the primacy of Fire, Air, Water, and Earth.⁶ Hippon of Kroton, a contemporary of Empedocles, explained biological causation upon the single principle of moisture (*hugron*), which alters under the influence of Hot/Cold to dry and wet, or coarse and fine, or so on.⁷ Likewise, Thrasy-machus of Sardis claimed that the primary bodily liquid was blood, which altered under the influence of Hot/Cold to produce pathogenic substances such as phlegm, bile, and pus (*sesēpos*).⁸ Melissos simply asserted that such substances as Fire, Air, Water, and Earth, iron/gold, alive/dead, dark/bright, and stone/earth forever seem to mutate into one another, as we see it.⁹ The atomists also had precisely two fundamental principles, atoms and void.¹⁰ The author of the Hippocratic *Fleshes* 1–2 (8.584–86 L.) argued that Heat is the sole cosmic principle, immortal and

⁴ Democritus DK 68 B 34; Hippocrates, *Regimen* 1.10 (6.484–86 L.), *Nature of Man* 3 (6.36–38 L.); Plato, *Phaedrus* 270ce, *Timaeus* 37cd, 42a–46a, 88–89, etc. Compare the discussions of Conger (1922) 1–15; Lloyd (1966) 235–6 (Anaximenes DK 13 B 2); and Guthrie 2 (1976) 471–72.

⁵ Anaximenes DK 13 A 7.3 = Hippolytus, *Ref.* 1.7.3; cf. Kahn (1960) 149–50.

⁶ Diogenes fr. 4, 9 Laks = DK 64 B 2, 5 = Simplicius, *In Phys.*, CAG 9 (1882) 151–52 and 152–53.

⁷ Hippon in Anon. Lond. §13 = DK 38 A 11: cited by Wehrli; cf. L. Zhmud in Keyser and Irby-Massie (2008) 421.

⁸ Thrasy-machus of Sardis in Anon. Lond. §14; cf. D. Manetti in Keyser and Irby-Massie (2008) 807.

⁹ Melissos DK 30 B 8 = Simplicius, *In De caelo*, CAG 7 (1894) 558; cf. I. M. Bugár in Keyser and Irby-Massie (2008) 540.

¹⁰ Leucippus DK 67 A 1.31 = D.L. 9.31; Democritus DK 68 A 38 = Simplicius, *In Phys.*, CAG 9 (1882) 28.

omniscient, and cause of *aithēr*, air, and earth. Turning from the *kosmos* to the human body, he explained in 3 (8.586–8 L.) the creation of its organs and parts by the action of heat upon the four principles or substances Fatty (*liparon*), Goopy (*kollōdes*), Moist (*hugron*), and Cold (*psuchron*).

Pluralists were not especially prone to follow Empedocles' line, although besides Plato and Aristotle, at least two medical contemporaries of Plato did so, namely Polybus,¹¹ and Philistion, whose four elements, Fire, Air, Water, Earth, had each one power (*dunamis*), respectively Hot, Cold, Wet, Dry.¹² The Hippocratic author responsible for *Seed/ Nature of the Child* and *Diseases* 4 proposed a different set of four primary substances, claiming that life was based on Blood, Bile, Phlegm, and Water.¹³

On the other hand, Anaxagoras alleged an unlimited number of principles, explicitly propounding an order of transition reminiscent of Anaximenes — clouds to water to earth to stones.¹⁴ Similarly Menestor of Sybaris proposed an unlimited number of pairs of “juices” (*chuloi* or *opoi*) to explain plant properties, while employing Hot/Cold as important explanatory principles.¹⁵

One or another pair of primary *opposites* was often postulated. Petron of Aigina, a contemporary of Plato, hypothesized that Hot/Cold were elements (*stoicheia*), and he aligned the dry with the Hot and the wet with the Cold.¹⁶ The Hippocratic *Regimen* offers a very similar model according to which all living things are composed of Fire and Water, of which Fire associates with hot and dry, and Water with cold and wet; his language is very similar to that of Anaxagoras.¹⁷ On the other hand, Dexippus of Kos offered Bile and Phlegm as the primary humours, which alter due to hot/

¹¹ Polybus in Anon. Lond. §21; cf. Hippocrates, *Nature of Man* 4 (6.38 L.); cf. D. Manetti in Keyser and Irby-Massie (2008) 681–82.

¹² Philistion in Anon. Lond. §24; cf. D. Manetti in Keyser and Irby-Massie (2008) 649–50.

¹³ Hippocrates, *Seed* 3 (7.474 L.), *Diseases* 4.32–3 (7.542–4 L.) introducing them, 4.35–8 (7.548–56 L.) describing each one, and 4.39–41 (7.556–62 L.) how they work together; cf. Lonie (1981) 55–62, 260–66, and L. Dean-Jones in Keyser and Irby-Massie (2008) 410–12.

¹⁴ Anaxagoras DK 59 B 4, 12 = Simplicius, *In Phys.*, CAG 9 (1882) 157, 156, respectively. Cf. Schofield (1980) 100–133; Sider (2005) 90–107 (B 4), 125–41 (B 12); these two fragments are cited by Wehrli. For the cycle of transformations, clouds to water to earth to stones, see fr. B 16 = Simplicius, *ibid.* p. 179, Sider (2005) 151–54.

¹⁵ Menestor DK 32 A 7 = Theophrastus, *CP* 6.3.5 for the juices, and A 5 = *CP* 1.21.5–7 for the Hot/Cold; Viano (1992); cf. L. Zhmud in Keyser and Irby-Massie (2008) 547–48.

¹⁶ Anon. Lond. §23; cf. D. Manetti in Keyser and Irby-Massie (2008) 638–39.

¹⁷ *Regimen* 1.3–4 (6.472–76 L.); cf. Anaxagoras DK 59 B 12 = Simplicius, *In Phys.*, CAG 9 (1882) 156; cf. J.M. Wilkins in Keyser and Irby-Massie (2008) 416–17.

cold, nutrition, etc., to produce diseases.¹⁸ The same theory appears in three Hippocratic treatises of the same era as Dexippus, i.e., c. 420–380 B.C.: (1) *Diseases*, (2) *Affections*, and (3) *Airs, Waters, Places*.¹⁹ The author of the *Airs, Waters, Places* associates south and hot with Bile, but north and cold with Phlegm, and explains how different waters — fresh, salt, rain, stagnant, etc. — induce either Phlegm or Bile.²⁰ Another monograph, *Sacred Disease*, sometimes thought to be related, also proposes Bile and Phlegm as primary, but employs as additional explanatory substances breath and blood.²¹

A tetrad of primary substances was by no means standard in the era of Empedocles, Philistion, Polybus, and Plato. The Hippocratic *On Ancient Medicine*, c. 430–400 B.C., rejects as principles precisely the tetrad later adopted by Aristotle — the Hot (*thermon*), the Cold (*psuchron*), the Wet (*hugron*), and the Dry (*xēron*) — on the grounds that it was too reductive.²² Foods, he says, have varying perceptible properties (*dunameis*), which are manifest also in the human body, namely salt (*halmuron*), bitter (*pikron*), sweet (*gluku*), sour (*oxu*), astringent (*struphnon*), insipid (*pladaron*), and many others (*alla muria*).²³ Hot/Cold are very powerful, but are by no means the sole agents at work, since the Pungent (*drimu*) causes diseases, as does the Salty, and even the Bitter, also known as yellow bile: §19 (1.616–20 L.).

Aristotle argued at length for the primacy of the four elements Fire, Air, Water, and Earth — which he explained in terms of twin pairs of yet more fundamental principles, Hot/Cold and Dry/Wet. The length and extent of his argument shows that Fire, Air, Water, and Earth could not yet be assumed standard, though Diocles of Carystus offered a similar model.²⁴

¹⁸ Anon. Lond. §15; *Suda*, Delta–238; cf. D. Manetti in Keyser and Irby-Massie (2008) 243.

¹⁹ *Diseases* 1.2 (6.142 L.), *Affections* 1 (6.208 L.), and *AWP* 3–4 (2.14–22 L.).

²⁰ *AWP* 7 (2.26–32 L.); cf. J. Laskaris in Keyser and Irby-Massie (2008) 406.

²¹ Bile and phlegm: *Sacred Disease* 8 (6.368–70 L.), 18 (6.388–90 L.); breath: 7 (6.368 L.), 10 (6.372–74 L.), 19–20 (6.390–4 L.); and blood: 9–10 (6.370–74 L.), 18 (6.388–90 L.); cf. J. Laskaris in Keyser and Irby-Massie (2008) 418.

²² *Ancient Medicine* 1 (1.570–72 L.), 13–15 (1.598–606 L.); cf. J. Laskaris in Keyser and Irby-Massie (2008) 407–8.

²³ Astringent and insipid are paired in §15: possibly the author also intended salt and bitter as a pair, and probably intended sweet and sour as a pair, for in §24 (1.634 L.), sweet naturally becomes sour. Cf. also *Regimen* 1.18 (6.492 L.), where sweet and sour are a pair, but *Fleshes* 13 (8.600 L.) makes sweet and bitter a pair.

²⁴ Diocles of Carystus, fr. 25 = Galen, *MM* 7.3 (10.462–63 K.) and fr. 27 = Galen, *Natural Faculties* 2.8–9 (2.110–40 K.), in the edition of van der Eijk (2000–2001); see D. Manetti in Keyser and Irby-Massie (2008) 255–57.

Moreover, Aristotle's introduction of a deeper layer of explanatory entities, the pairs of qualities, shows that Fire, Air, Water, and Earth were neither necessary nor fundamental, as explanatory principles (though Aristotle surely saw them as necessarily existing). His further nuance of the two exhalations, in *Meteor.* 1.4 (341b–342a) and 2.4 (359b–361b), shows that Fire, Air, Water, and Earth were not sufficient.

Aristotle's student Theophrastus called into question the status of Fire as an element (*On Fire* 1–4), pointing out that Air, Water, and Earth are self-sufficient, naturally mutate into one another, and cannot self-generate, whereas Fire both generates and destroys itself, is often generated contrary to nature, and requires a substrate, i.e., fuel, the exhaustion of which destroys Fire.²⁵ Similarly, *Meteorologika* 4.1 (379 a14–16) claims that everything decays except Fire, including Air, Water, and Earth, which are all “matter” (*hulē*) in relation to Fire.²⁶ Democritus had already treated Fire as a special case, if we accept the attribution to him of a work *On Fire and Things in Fire*.²⁷ On the other hand, Theophrastus, *On Waters* (note the plural), also showed the problems with treating water as a simple element, recording that water differs, among other ways, in its degree of hot and cold.²⁸ Similarly, his *On Stones* shows the strange variety found in things made primarily of Earth (esp. §3–5, 48).

Meteorologika 4.8–9 (384b–388a) also attempted to classify substances based upon their reactions to Aristotle's two pairs of fundamental principles. Eighteen pairs of properties are enumerated, all but one pair (#15) given as a pair of adjectives, “positive — privative”:

1	<i>pēkton</i>	solidifiable, or not
2	<i>tēkton</i>	meltable, or not
3	<i>malakton</i>	softenable (by heat), or not
4	<i>tenkton</i>	softenable (by water), or not
5	<i>kampton</i>	flexible, or not
6	<i>katakton</i>	breakable/ crackable, or not
7	<i>thrauston</i>	fragmentable/ pulverible, or not
8	<i>thlaston</i>	stampable, or not
9	<i>plaston</i>	*plastic, or not
10	<i>piēston</i>	*squeezable, or not
11	<i>helkton</i>	ductile, or not

²⁵ Hahm (1977) 97–98.

²⁶ The authorship of *Meteorologika* 4 does not affect my argument.

²⁷ Cole (1967/1990) 57.

²⁸ Theophrastus, *On Waters*, fr. 214A FHS&G = Athen. *Deipn.* 2.15–17 (41f–43b).

12	<i>elaton</i>	malleable, or not
13	<i>schiston</i>	fissile, or not
14	<i>tmēton</i>	cuttable, or not
15	<i>glischron/psathuron</i>	viscous, or friable
16	<i>pilēton</i>	*compressible, or not
17	<i>kauston</i>	combustible, or not
18	<i>thumiaton</i>	fumeable, or not

The three starred pairs are very similar to one another, and it would not always be clear which of the three would apply to any given material.

Most bodies are differentiated by these qualities (*pathē*), and each quality has its *dunamis*. Certain materials possess or lack a given quality depending on whether the material has or lacks pores (*poroi*). Ceramics have small pores and are thus *atēkta*, 4.8 (385 a27–30),²⁹ while any earthy thing with pores larger than the *onkoi* of water is *tenkton*, 4.9 (385 b19–21), but earthy things that are *tēkton* (i.e., by water) have pores throughout: 4.9 (385 b21–26). The distinction between *katakton* and *thrauston* is that things which have many alternating (*parallattontas*) pores are *thrauston*, while things which have large pores are *katakton*: 4.9 (386 a9–17). The squeezability (*piēston*) of a sponge is explained by its visible pores, and wax and flesh are likewise *piēston*, presumably with invisible or very fine pores: 4.9 (386 b2–10).³⁰ To be fissile (*schiston*), a material must have pores along which it coheres (*prosphuetai allēlois*) running “lengthwise” (4.9 [387 a1–3]) — I suppose he means something like the grain of wood (cf. Theophrastus, *HP* 5.5.6), or the rock species slate. The combustible (*kauston*) material has pores into which Fire can enter: 4.9 (387 a13–22). (The *glischron* is also found in Theophrastus, *Fatigue* 18, for “elastic” things.) This analysis of mechanical and thermal qualities omits very many sensible properties, notably color, taste, and smell.

Contemporary with Theophrastus, the doctor Praxagoras of Kos advanced a theory of humours which Galen describes as a development of the Hippocratic four into many *eidē* and *diaphoras*, up to ten kinds, not including blood (Praxagoras fr. 21 St.).³¹ Galen misleadingly unifies the humoural theories of the Hippocratic corpus, and his monograph on Praxagoras’ system is lost. Rufus of Ephesos names a total of twelve humours in Praxagoras’ system (Praxagoras fr. 22 St.), three being forms of phlegm,

²⁹ Cf. also the account of roasting, *Meteor.* 4.3 (381 b1–5).

³⁰ Cf. Theophrastus, *Fatigue* 8, of materials for seats.

³¹ Galen, *Natural Faculties* 2.9 (2.135–37 K.); see the edition of Steckerl (1958).

another four being distinguished by taste, and so on.³² Both Galen's and Rufus' reports evidently contain their own interpretations of a four-hundred-year-old system. A summary list compiled from Praxagoras' fragments yields thirteen humours, most having flavors, or at least mouth-feel, since derived from foods:

Praxagoras		Fragments (Steckerl)
<i>halukon</i>	salty	22 (taste), 24–25
<i>gluku</i>	sweet	22 (phlegm)
<i>isokraton</i>	"balanced"	22 (phlegm)
<i>kollōdes</i>	gooey	38
<i>lekithōdes</i> , pl.	yolky	21–22
<i>nitrōdes</i>	soapy	22 (taste), 25
<i>xustikon</i>	(astringent?)	21–22
<i>oxu</i>	sour	22 (taste)
<i>pachu</i>	thick	22
<i>prasoeides</i> , pl.	greenish	22
<i>pikron</i>	bitter	22 (taste)
<i>stasimon</i> , pl.	constipative	22
<i>hualōdes</i>	clear	22 (phlegm), 50 (cold!), 51–56, 59, 95

Moreover, three of these thirteen are said by Rufus to have had multiple forms or kinds (marked "plural" in the table): *lekithōdes*, *prasoeides*, and *stasimon*. Note especially the presence of the "Thick" (*pachu*), just as in Strato. The Hippocratic *Fleshes* described air as the most wet and most thick (*pachu*) substance, in contrast to *aithēr* and earth.³³ In the Hippocratic corpus, the "greenish" describes vomit and feces,³⁴ while the "constipative" applies to foods or medicines prescribed for that goal.³⁵ Athenaios, *Deipn.* 3.20 (81bc), claims Praxagoras identified the *xustikon* with the *hualōdes* (not in Steckerl). The "balanced" may correspond to the "insipid" of *Ancient Medicine*.

³² Rufus, *Names of the Parts of the Body* §226, ed. Daremberg and Ruelle (1879) 165–66.

³³ *Fleshes* 2 (8.584 L.) and 13 (8.600 L.) say digestion involves extracting the lightest (*lepton*) and wettest portions, leaving the thickest (*pachu*) to become feces; and 16 (8.604 L.) says putrefying water becomes thicker (*pachu*).

³⁴ For *prasoeides*, see, e.g., *Prognosis* 11 (2.138 L.), 13 (2.144 L.), *Epidemics* 7.11 (5.384 L.), 7.23 (5.392 L.), 7.39 (5.406 L.), and 7.84 (5.440 L.).

³⁵ For *stasimon*, see, e.g., *Affections* 49 (6.258 L.), 54–55 (6.264 L.), 59 (6.268 L.), *Regimen* 2.45 (6.542–44 L.), 2.54–5 (6.558–66 L.).

Praxagoras' student Phulotimos, a contemporary of Strato, offered a similar and better-documented system, in his work *On Food*, quoted both by Athenaios, *Deipnosophists*, and by Oreibasios. Each of Phulotimos' primary humours was called a *dunamis*, was derived from food, and explained some facet of health or disease. A summary list compiled from his fragments yields a dozen, all having flavors, or at least mouth-feel (the asterisks mark those three not attested for Praxagoras):

Phulotimos		Fragments (Steckerl)	Hippocratic
<i>halukon</i>	salty	9, 12, 15	<i>Anc. Med.</i>
<i>gluku</i>	sweet	6, 8, 9	<i>Anc. Med.</i>
<i>drimu*</i>	pungent	6, 9	<i>Anc. Med.</i>
<i>kollōdes</i>	goosey	5, 9, 12	<i>Fleshes</i>
<i>lekithōdes</i>	yolky	12	
<i>liparon*</i>	fatty	8, 12	<i>Fleshes</i>
<i>nitrōdes</i>	soapy	9	
<i>xustikon</i>	(corrosive?)	11	
<i>oxu</i>	sour	11	<i>Anc. Med.</i>
<i>pikron</i>	bitter	12	<i>Anc. Med.</i>
<i>struphnon*</i>	astringent	12	<i>Anc. Med.</i>
<i>hualōdes</i>	clear	5	

As noted in the table, six of these appeared in the Hippocratic *Ancient Medicine*, and we have encountered the Goosey (*kollōdes*) and the Fatty (*liparon*) together, along with the Moist and the Cold, in the cosmological speculation of the Hippocratic *Fleshes*. The Fatty is frequent in the Hippocratic corpus to describe foods,³⁶ whereas the Goosey is used to describe pathologic bodily fluids.³⁷ The Hippocratic corpus frequently describes foods and wine as Astringent (*struphnon*), desirable in certain cases.³⁸

Three of the humours shared by Praxagoras and Phulotimos are harder to explain by parallels: the Yolky (*lekithōdes*), the Soapy (*nitrōdes*), and the "Clear" (*hualōdes*), as the words are rarely used in the Hippocratic

³⁶ For *liparon*, see many citations in the works *Affections*, *Regimen* 2–3, *Diseases* 2–3, *Nature of Woman*, and *Diseases of Woman* 1–2.

³⁷ For *kollōdes*, see *Epidemics* 7.61 (5.426 L.): infection; *Diseases* 2.60 (7.94 L.): pus; *Regimen in Acute* (Sp.) 9 (2.408–10 L.): rheum in head; *Glands* 7 (8.562 L.): flux from head to glands of throat.

³⁸ For *struphnon*, besides *Ancient Medicine*, see, e.g., *Mochlikon* 36 (4.380 L.), *Epidemics* 7.25 (5.396 L.), *Affections* 55 (6.264 L.), *Regimen* 2.54–6 (6.560–68 L.), *Internal Affections* 22 (7.222 L.), *Nature of Woman* 13 (7.330 L.), and *Diseases of Woman* 1.64–5 (8.132–34 L.).

<i>Anc. Med.</i>	Democr. (flavors)	Plato, <i>Tim.</i> (flavors)	Aristotle (flavors)	Aristotle (scents)	Theophrastus (flavors)	Theophrastus (scents)
<i>halmuron/ halukon</i>	*	65e	Soul 2.10; Sens. 4		CP 6.1.2–3; Sweat 1–4, 13, 16	
<i>gluku</i>	*	66c	Soul 2.10; Sens. 4	Sens. 5	CP 6.1.2–3; HP 7.9.5, 9.13.4; Sweat 1–4	Odors 2
<i>drimu</i>	*	66a	Soul 2.10; Sens. 4	Sens. 5	CP 6.1.2–3; HP 7.9.5; Sweat 16	Odors 2
<i>oxu</i>	*	66b	Soul 2.10; Sens. 4		CP 6.1.2–3; HP 7.9.5; Sweat 1–4, 13, 16	
<i>pikron</i>	*	65e (color: 67e)	Soul 2.10; Sens. 4	Sens. 5	CP 6.1.2–3; HP 9.13.4; Sweat 13	Odors 2, 10, 65
<i>struphnon/ austēron</i>	*	65d (color: 67e)	Soul 2.10; Sens. 4	Sens. 5	CP 6.1.2–3; HP 7.9.5; Sweat 16	Odors 10
<i>liparon</i>		60a	Soul 2.10; Sens. 4	Sens. 5	CP 6.1.2–3	
<i>nitrōdes</i>		65e only	Probl. 23.40 (935b – 936a)			

corpus,³⁹ while a fourth shared humour, the *xustikon*, is found elsewhere only in Galen, *Nat. Fac.* 2.9 (2.135–37 K.). Phulotimos, fr. 11 St. = Athenaios, *Deipn.* 3.20 (81b), analyzes green apples as having both the *oxu* and the *struphnon*: a blend said to create the *xustikon* and indigestion (contrast Praxagoras, above). Galen, in fr. 50 St. of Praxagoras, explains the “Clear” as “cold phlegm,” and so perhaps the “Clear” is connected with the “Cold” of the Hippocratic *Fleshes*.⁴⁰

The elements of Praxagoras and Phulotimos share a common core, namely the standard Greek flavor-words, as used by Democritus, the author of *Ancient Medicine*, Plato, Aristotle, and Theophrastus, in *Causes of Plants, Sweat, and Odors*.⁴¹ These flavors were in each case explained in terms of the fundamental entities postulated by the thinker, whether atoms, triangles, or the root qualities of Aristotle. Moreover, they called for explanation just as much as did Fire, Air, Water, and Earth, or just as much as did colors, or other apparently irreducible observables. Democritus,⁴² Plato, and Aristotle fully integrate such explanations to their accounts of nature. For Democritus and Plato, there were six flavors that called for explanation, although in the same context Plato also mentions a seventh, the *nitrōdes*. Plato also makes an analogy between flavors and colors, at least for bitter and astringent (*Tim.* 67e). Aristotle, on the other hand, counts seven flavors which he arranges on a spectrum, with sweet and fatty at one extreme, bitter and salt at the other, and astringent, pungent, and sour between.⁴³ Theophrastus believes that seven flavors is a “better” way

³⁹ For *lekithōdes* see only *Epidemics* 4.14 (5.152 L.) of sediment in wine; for *nitrōdes* see only *Regimen in Acute* (Sp.) 10 (2.414 L.) of a flux from the head; for *hualōdes* see only *Coac.* 146 (5.614 L.), 352 (5.658 L.) of wine.

⁴⁰ Also in Phulotimos, fr. 5 = Galen, *Alim. Fac.* 1.12 (CMG 5.4.2, p. 234), where it is Galen who explains the “Clear” as a compound of the Gooney and the Cold.

⁴¹ *Causes of Plants* 6.1.2–3 lists all the terms; four are also in *HP* 7.9.5, and just *gluku* and *pikron* in *HP* 9.13.4; note that *HP* 9.20.5 refers to *glukustruphnos*. *Sweat* also uses six of the terms: 1–3 discusses *halmuron*, *gluku*, and *oxu*, 13 lists *halmuron*, *oxu*, and *pikron*, and 16 considers *drimu*, *halmuron/halukon*, *oxu*, and *struphnon*. Similarly, *Odors* 2 mentions *drimu*, *gluku*, and *pikron* (along with other evaluative terms), 10 mentions *struphnon* and *pikron*, and 65 mentions water that is *nitrōdes* and *pikron*: omitting only salty and sour, neither proper to a work on odors: cf. Aristotle, *On Sensation* 5 (443 b9–14).

⁴² Democritus’ account is preserved in Theophrastus, *On Sensation* 65–67 = DK 68 A 135.65–67, as well as *CP* 6.1.6.

⁴³ See *On the Soul* 2.10 (422 b10–14), *On Sensation* 4 (442 a19–29), and for scents *On Sensation* 5 (443 b9–14). Note that *nitrōdes* does not appear in Aristotle, but does appear in ps.-Aristotle, *Problems* 23.40 (935 b34–936 a4), of water, and (as R. W. Sharples pointed out to me) ps.-Aristotle, *Mirabilia* 53 (834 a31–33), which may derive from Theophrastus, *On Salt, Soda and Alum*, cf. fr. 137.25 FHS&G = D.L. 5.42 and fr. 223 = Pliny 31.106–15, and see Sharples (1998) 192.

to divide up the space, but allows that some make use of eight: *CP* 6.4.1. The pseudo-Aristotelian *Problems* 34.5 (964 a1–3) remarks that the tongue becomes *gluku*, but never *pikron*, *halmuron*, or *oxu*. The work of Praxagoras and Phylotimos on flavors recalls our situation, in which we assume four flavors, salty, sweet, sour, and bitter (or five, if we include umami), but acknowledge that such a system scarcely explains the flavor, say, of carrots (see chart on p. 302).

Praxagoras and Phylotimos appear to have taken one step *back* from reductionism, and to have asserted that those seven flavor terms, plus a few others, were really irreducible observables, not to be explained in terms of other supposedly more fundamental entities. That is, observable components of foods were taken to be the *explanans* and were deployed to explain health and disease without recourse to a more remote or abstract set of entities. Praxagoras and Phylotimos are not attested to have explained any appearances other than medical appearances, and for those they evidently argued that their dozen or so physiologically oriented fundamental entities would suffice.

Moreover, their move to reject an appeal to more fundamental entities, whose existence they disputed or denied, was not only familiar in the medical tradition (*cf.* especially *Ancient Medicine* or *Sacred Disease*), but was also consonant with some contemporary trends away from reductionism and towards skepticism and empiricism.⁴⁴ Epicurus famously eschewed resolution in explanation, and preferred to offer a collection of explanations,⁴⁵ while Pyrrho eschewed resolution altogether,⁴⁶ and Theophrastus raised many problems with the standard peripatetic model, not only about fire.⁴⁷

III

That is the contemporary context in which Strato operated. He, like others,⁴⁸ adopted — whether from atomists or elsewhere — the concept of pores and localized voids, and transformed it as an explanatory move. In the same way, I claim, Strato adapted the medico-philosophical speculations I have

⁴⁴ Frede (1988).

⁴⁵ See Epicurus, *Ep. Pyth.* 86–88 for the statement, and 92–116 for examples; *Ep. Hdt.* 80 is similar. See Asmis (1984) 321–30.

⁴⁶ Powers (2001).

⁴⁷ Keyser (1997); M.G. Sollenberger in Keyser and Irby-Massie (2008) 798–801.

⁴⁸ Pores, *cf.*, e.g.: Aristotle, *Meteor.* 4.8–9 (384b–388a) — cited above, p. 298; the ps.-Aristotelian *Colors* 4 (794 a25–29, b7–10); and probably Theophrastus (in his botany).

been describing in order to propound his theory of elements. Intervening in the long debate about which observables were fundamental, Strato, we are told by the fragments cited in sect. 1 of this paper, turned to sensible qualities. From among those sensible qualities, he chose at least Hot and Cold, and, I am claiming, the flavor and color terms which had always been leading *explananda* — which he now made into the *explanantia*. An investigation of flavors and colors was an established part of the Academic and Peripatetic discourse — Strato's materialist innovation, I believe, was to make those seven observable qualities into elements. Moreover, the quality "Thick" (*pachu*), hinted at in one fragment, probably was indeed also one of the elements, and it may be presumed, so were many of the qualities from the list of 18 in *Meteorologika* 4. Probably the seven qualities there said to depend upon pores (*thrauston*, *katakton*, *kauston*, *piëston*, *schiston*, *tëkton*, *tenkton*) were not promoted to elemental status by Strato's theory, since — if he also explained their properties via pores — he would presumably have regarded that as a sufficient explanation.

We do know that Strato, like Epicurus, argued that all his elements had relative weight, and moved towards the center: thus, e.g., the Cold might be heavier than the Hot, but both would fall.⁴⁹ Simplicius records Strato's theory of relative weight, in rejecting it: *In Arist. De Caelo* 1.8 (CAG 7 [1894] 269) = **49**. He and Stobaeus also supply the evidence that Strato said that the lighter elements only rise because and when they are expelled by the pressure of the heavier: **50AB**. Hypothesizing a multiplicity of elements each with relative weight is a sensible development from a theory in which one element, Earth, has "absolute" weight, and one, Fire, has "absolute" lightness, with two others arranged between, as in Aristotle, *On the Heaven* 4.3–4 (310a–312a). The precise determination of relative weight, i.e., of what we would call "density," did not precede Archimedes' discovery (*Vitr.* 9.pr.9–12).⁵⁰

Nor is an interest in medical matters strange for Strato. Philosophic and particularly Peripatetic interest in medical research was well-established — for example, there are Plato's explorations in the *Timaeus* (69A–92C), and Aristotle's long involvement with biology is well-represented in the surviving texts, even if his own illustrated *Dissections* has perished.⁵¹

⁴⁹ I am indebted to Stephen White for alerting me to the relevance of these fragments.

⁵⁰ For Aristotle's own attempts to explain density, see: *Phys.* 4.8 (216 a26–33), 4.9 (217 b11–20); and for his reports of the attempt(s) of unnamed predecessor(s), see *On the Heaven* 4.2 (308 b28–309 a11).

⁵¹ Aristotle's *Dissections*: *HA* 1.17 (497 a31–32), 3.1 (509 b21–24), 4.1 (525 a8–9), 6.11 (566 a13–15), etc.; cf. Sharples (1995) 34–35. Aristotle's approval of the philosophical value

Diogenes Laertios reports that Philistion taught the young Eudoxos (8.86), and that Erasistratos had studied with Theophrastus (5.57);⁵² Aristotle's student Menon wrote a medical doxography,⁵³ and four Peripatetics of roughly Strato's era composed the pseudonymous *Breath*,⁵⁴ and the three works gathered in the *Physiognomy*.⁵⁵ In the generation after Strato, the Stoic Chrysippus appears to have deployed medical data in forming his arguments about the *hēgemonikon*.⁵⁶

It is surely relevant that among the titles attested by Diogenes Laertios 5.59 for Strato (55) are a handful on indisputably bio-medical topics, with titles that could well belong in the Hippocratic corpus:⁵⁷ *On Breath* (#1) — cf. the extant pseudonymous work; *On Generation of Animals* (#3); *On Diseases* (#9); *On Crises* (#10); *On Vertigo and Dizziness* (#11) — nearly the same title as that of Theophrastus' work;⁵⁸ and lastly *On Food and Growth* (#13).

Strato then, faced with the inadequacies of the four-element theory, especially as demonstrated by his predecessor Theophrastus, aware of the long history of alternate theories from Menon's work, and well-versed in the contemporary debate, rejected the more reductive account of Aristotle, and advocated instead that perceptible qualities were elements. Attempting to explain the diversity of natural phenomena in terms just of four elements or two pairs of opposites was inadequate — so Strato reasoned that certain perceptibles, apparently irreducible, such as “Hot” or “Sweet” or “Red,” were better explained by positing that they themselves were elemental.

IV

Not only does this hypothesis make good sense of the doxographical fragments with which I began, it also makes better sense of four other fragments

of medical studies: *On Sensation* 1 (436 a17–b1) and *Respiration* 21 (480 b26–30). Medico-philosophical works by Aristotle include not only *Generation of Animals* and *Parts of Animals*, but also *Length of Life*, *Respiration*, and *Youth and Age*; and Balme (1985) argues that the medico-philosophical tenth book of the *HA* (“On conception”) was written by Aristotle before the *GA*.

⁵² Fr. 18.8 = 1 FHS&G; Lonie (1964); J. Scarborough in Keyser and Irby-Massie (2008) 294–96.

⁵³ Jones (1947); D. Manetti in Keyser and Irby-Massie (2008) 510–11.

⁵⁴ See O. Hellmann in Keyser and Irby-Massie (2008) 145–46.

⁵⁵ See S. Vogt in Keyser and Irby-Massie (2008) 149.

⁵⁶ Hahm (1977) 161–63; de Lacy (1984) 201–9.

⁵⁷ Two more, *On Sleep* (#5) and *On Vision* (#6) are conceivably medical. Sollenberger, p. 254 FSS, identifies thirteen bio-medical works by Theophrastus, and see fr. 328, 350, and 384 FHS&G.

⁵⁸ See R. W. Sharples, ed., “On Dizziness,” pp. 169–249 FSS.

or clusters of fragments. The four topics are (1) light and color, (2) the soul, (3) the magnet, and (4) the asymmetry of certain opposites.

Strato is attested to have composed a work *On Colors* as well as one *On Sight* (D.L. 5.59 = **55**, #8 and #6 respectively), and three fragments seem related to the topics of those works. Heron and Simplicius record that Strato (**30**) explained that light and heat and any “other bodily property” (*allē dunamis . . . somatikē*) are able to pass unimpeded through such bodies as water and air because of the voids.⁵⁹ Now, on a theory where light or heat were an accident of matter, or the actualization of a potential, the issue would not even arise — clearly here light and heat are bodily, and we are told that heat, or the Hot, was an element, so evidently light or color was as well. Moreover, Stobaeus tells us that Strato (**64**) said that colors are transmitted from objects by coloring the intervening air.⁶⁰ So what we expect is that there were some number of elemental colors — as in Democritus,⁶¹ and in Plato, *Timaeus* 67c–68c. These colors constituted light and their mixtures produced secondary colors — just as for the six fundamental flavors or humours discussed above, sect. 3. Both Aristotle and the Aristotelian *Colors* refer to the theory that Strato rejects, according to which, if light were a body, it would have to force its way through air and water.⁶² Strato however did not reject the bodily nature of light, only the consequence alleged, that it would have to force its way through.

Indeed, given that heat or the Hot is an element and is transmitted through solids, there is a natural correlation between Strato’s theory of pores and his theory of elements as qualities. The pores provide a natural explanation for the transmission of certain qualities through matter, whereas the composition of stuffs, built up from qualities perhaps, provides a natural origin for the pores. That same correlation exists also for light — or, as I am suggesting, for colors.

Secondly, in two fragments on the soul, Strato seems to be saying that something is transmitted through the body during the apperception of sensation. In a fragment of a work ascribed to Plutarch, *Desire and Grief* 4,

⁵⁹ Herōn *Pneumatics* 1 (pp. 24–26 Schm.) = Simplicius, *In Phys.*, CAG 9 (1882) 693.

⁶⁰ Aëtios 4.13.7 (p. 403 D.) = Stobaeus, *Ecl.* 1.52.3; for light as a body, Wehrli rightly compares Democritus DK 68 A 135.50 = Theophrastus *On Sensation* 50, and Strato’s student Aristarchus in Aëtios 1.15.5 (p. 313 D.) = Stob. *Ecl.* 1.16.1, saying that light is color impinging upon substances. Cf. also Gottschalk (1965) 154–55. Sharples, pp. 217–20 FSS, notes that Theophrastus and Aristotle sometimes seem to speak of “vision-rays” as bodily.

⁶¹ Elemental colors in Democritus are attested by Theophrastus, *On Sensation* 73–78 = DK 68 A 135.73–78.

⁶² Arist. *Meteor.* 1.5 (342 b5–16), 3.4 (373 b2–13); *Colors* 1 (791 a25–b2), 3 (793 b33–794 a12).

is a description of the transmission of sensation ascribed to Strato (63B), pointing out that tightly binding them cuts off feeling in the extremities.⁶³ Tertullian, *De Anima* 14.5, in discussing how the soul can be a unity yet spread through the body, refers to Strato's theory (59) that the soul is *in totum corpus diffusa*, like the air in the *organum hydraulicum*, thus producing different effects in different parts, and is everywhere "not so much cut up as dispersed" *non tam concisa quam dispensata*. Strato no doubt believed sensation and the soul to have some material basis, as had many pre-Socratics: e.g., Diogenes of Apollonia suggested air,⁶⁴ and Democritus, followed by Epicurus, hypothesized a particularly fine and fiery sort of atom.⁶⁵ In Strato's theory, whatever was the material basis of sensation, it could be transmitted through the body, and the body no doubt had pores to mediate that transmission. It also seems possible that what was transmitted was one of Strato's elements — presumably at least Hot/ Cold (and perhaps Thick and others) in the case of touch, perhaps color in the case of sight, or a flavor in the case of taste, or some other elemental quality in other cases. That is, Strato's theory of sensation itself becomes more coherent if he hypothesized manifold sensible qualities as elemental. As to soul itself, Strato may also have proposed some elemental quality or qualities as its material basis — certainly that would cohere with his thinking, and is hinted at by the Tertullian passage.

Thirdly, Simplicius informs us that Strato (28) discussed how the attraction of the magnet occurs.⁶⁶ The text shows that Strato explained magnetic attraction as being due to something drawn out by the magnet-stone from the pores of the iron, "with which body" the iron is also attracted (. . . *to ek tōn porōn tou sidērou hē lithos, hōi sōmati kai sunelketai ho sidēros*). That "body," I suggest, must be some bodily quality, perhaps even the quality of attraction *holkē*, which plays a role in other forms in early cosmology, in medical theories, and in Stoic notions of "sympathy."⁶⁷

⁶³ I am indebted to R. W. Sharples for alerting me to the parallel in Theophrastus, fr. 346 FHS&G = Photius, *Bibl.* §278 (525b), where it is the transmission of pneuma that is being interrupted by compression.

⁶⁴ Diogenes fr. 8, 9 Laks = DK 64 B 4, 5 = Simplicius, *In Phys.*, CAG 9 (1882) 152 and 152–53.

⁶⁵ Leucippus (and Democritus) DK 67 A 28 = Aristotle, *On the Soul* 1.2 (403 b31–404 a16), cf. D.L. 9.44; Epicurus, *Ep. Hdt.* 63.

⁶⁶ Simplicius, *In Phys.*, CAG 9 (1882) 652, 663; cf. Gottschalk (1965) 131–32.

⁶⁷ The sun drew vapors to itself: Hdt. 2.25; Antiphon, *On Truth*, bk 2, fr. 26 Pendrick; Xenophanes DK 21 A 40 = Aëtios 2.20.4–5, A 46 = Aëtios 3.4.4 (p. 371 D.) — cf. Keyser (1992); and Heraclitus DK 22 A11 = Arist. *Meteor.* 2.2 (354 b33–355 a32) = fr. 58 Marcovich, cf. D.L. 9.9. Other sorts of attraction: Anaximenes DK 13 A 7; Democritus DK 68 B

Fourthly, a late antique commentary on Plato's *Phaedo*, by Damascius or Olympiodorus, lists seven objections made by Strato (76) to arguments for the immortality of the soul, and also records that Strato said cold cannot "admit" heat and continue to exist (81).⁶⁸ The latter could mean that both Hot and Cold would not be found in the same object at the same time, cf. 53 — but perhaps they could co-exist in a mixture, as 5 Hot plus 3 Cold, without either "admitting" the other. That may be implied by two of his objections, where Strato points out that things that arise out of one another are only identical in kind, not in number (objection 3), and that opposites arise out of one another only when their substrate (*hupokeimenon*) is preserved (objection 6) — not the case for death. Whether Strato denied a substrate for other cases is not known, though he did observe that some opposites do not arise from one another (cf. immediately below, on objections 4 and 5). In any case, there is no evidence that Strato himself argued for a substrate, and a theory in which qualities were themselves bodily elements would not require a substrate. Perhaps there was not in his theory any greater ontological correlation between Hot and Cold than there was between Hot and Thick, or between Hot and Black, and instead each (elemental) quality was an element in its own right without reference to other elements.

Strato also raised the objection that certain alleged opposites do not behave symmetrically: flesh comes from nourishment, but not nourishment from flesh, while rust comes from bronze and coals from wood, but not the reverse (objection 4), likewise old men come from young, but not the reverse (objection 5). Here too Strato denied the symmetry of certain pairs of opposites. On a theory of elements that contained not only Hot and Cold, but also such elements as Red and Astringent, non-symmetric behavior of elements would be allowed and expected, and such

25; Philolaus DK 44 A 18 = Aëtios 2.5.3; Archelaus DK 60 A 17; Metrodorus of Chios DK 70 A 4; Hippocrates, *Ancient Medicine* 22 (1.626–34 L.), *AWP* 8 (2.32 L.), *Nature of the Child* 17.4 (7.498 L.), *Diseases* 4.33–5 (7.544–50 L.), *Heart* 8–9 (9.84–6 L.); Aristotle, *GA* 2.4 (739 b9–10), *Meteor.* 4.1 (379 a22–26); Theophrastus, *On Winds* 47. Cf. Lonie (1981) 266–68.

⁶⁸ Sharples in 76 and 81 cites from the most recent edition, which tentatively attributes the text to Damascius, but Norvin (1913/1968), followed by Hackforth (1955) 195–98, assigned it to Olympiodorus, as does Viano (2006) 35–36; see G. Karamanolis in Keyser and Irby-Massie (2008) 589. Confirmation of Olympiodorus as commentator may be found in the author's interest in elements and their transformations, if the commentator is the same as the alchemist: see C. Viano in Keyser and Irby-Massie (2008) 589–90, and in any case Olympiodorus the commentator wrote on *Meteorlogika* book 4: Viano (2006), attesting an interest in material transformations.

transformations as wood burning or bronze corroding would be explicable as elemental transformations not requiring any symmetric reverse transformation.⁶⁹ (He also seems to be reflecting upon what we would call entropy, a topic he might well have discussed in his book *On Time*: 31–37.)

V

I have offered no proof. My argument has been *kata to eikos* — but it seems to be the best one can do with the little we have left. Strato offered a theory in which it was the qualities that were the elements, and among those qualities were certainly Hot and Cold. It seems most unlikely that he stopped there, and one fragment appears to support Thick as another element. Secondly, the medico-philosophic tradition provided many examples of quality-based non-standard theories of elements, and in particular four thinkers — the author of *Ancient Medicine*, Democritus, Plato, and Aristotle — treated six or seven primary flavors either as first-class objects, or else as *explananda* on the same level as the standard elements Fire, Air, Water, and Earth, or else as entities receiving explanation almost as fundamental as those elements.

Combining those two points, I have suggested that Strato's theory of elements included the primary flavors and primary colors, as well as other qualities, such as those in *Meteorologika* 4. Such a theory could have met known objections to the standard four-element theory, and seems to clarify a diverse set of Strato's fragments concerning light and color, the soul, the magnet, and the asymmetry of certain opposites.

But in the end, however probable my account may be, what I have is only an imputation. Most of us have recently been surprised to discover from the Strasbourg papyrus of Empedocles that one poem contained both natural philosophy and theology — to use our labels; we may hope some day to be just as surprised by a new papyrological discovery about Strato's elements.⁷⁰

⁶⁹ Compare theories of cataclysms or periodic destructions in Stoic thought, as preserved in Theophrastus in Philo Iud., *Aetern.* 118–31 = fr. 184 FHS&G; cf. Sorabji (1983) 185.

⁷⁰ I am grateful as always to W.W. Fortenbaugh for his role in this work, and to R.W. Sharples for his sure insight and wise counsel; I. Bodnár, J. Mejer, and D. Modrak made valuable suggestions in the discussion after this paper was presented in Grenoble. The libraries of Columbia University and New York University, and of the New York Academy of Medicine, plus the New York Public Library, provided much support. Omissions of evidence and errors of fact or argument remain my own.

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8

Straton sur le poids

*Fragments 49 et 50A, B, C, D Sharples**

David Lefebvre

I

Dans son livre paru en 1890, Georges Rodier voit en Straton le premier représentant d'un compromis entre la physique dynamique d'Aristote et celle mécaniste de Démocrite. Sorti du Peripatos, "il n'est pas possédé sans réserve de l'esprit de cette école" et c'est autour du problème de la "pesanteur" que, selon Rodier, Straton va appliquer cette méthode du compromis de manière privilégiée.¹ Sur ce point de sa philosophie, qui nous intéressera ici, comme sur les autres, la question classique est de savoir si les innovations conceptuelles que l'on peut identifier chez lui correspondent à des manières de s'inscrire dans l'"esprit" de cette école, de prolonger des pistes aristotéliennes ou de rompre avec une certaine physique. Le jugement que l'on peut émettre sur ce point dépend aussi de celui porté sur l'histoire du Peripatos depuis Théophraste: Straton poursuit-t-il une refonte de la

* Je remercie le professeur Robert Sharples pour ses corrections sur une première version de cette étude. Toutes les erreurs sont les miennes.

¹ Voir Rodier (1890) 6–7.

physique aristotélicienne entamée par Théophraste ou ses corrections ont-elles pour objet de simplifier, consolider, défendre la cosmologie péripatéticienne?² Certains témoignages, à charge, en donnent l'image d'un "renégat."³ Straton serait non seulement celui par lequel commence, selon Cicéron (*De finibus* V 5 13 = **8A**), la dégénérescence du Peripatos, mais aussi celui qui se serait le plus explicitement désolidarisé des principales thèses du fondateur de son école. Straton est connu pour avoir mis toute force divine dans la nature (Cic., *De natura deorum* I 13 35 = **19A**) et pour avoir proposé une explication du monde au moyen de "poids et mouvements naturels" (Cic., *Academica* II 121 = **18**, 11–12). Ce que confirme son refus de la causalité du moteur immobile, et ce, dans la suite des critiques de Théophraste. Le témoignage de Plutarque (*Adv. Coloten* XIV 1115 b = **20**) affirme son désaccord avec Aristote "sur de nombreux points" et son opposition à Platon: au contraire de ce dernier, pour lui, le monde n'est pas un vivant⁴; pour lui, et contre cette fois Platon et Aristote, ce qui est selon la nature suit (ἔσθθαι) de ce qui est selon la fortune (κατὰ τύχην), car il a mis le hasard (τὸ αὐτὸματον) au principe de ses explications physiques.

Par une illusion de perspective dont il faut se garder, la proximité des positions de Straton et de celles de son contemporain Épicure rend inévitable un infléchissement de l'interprétation des thèses de Straton, à tel point que l'on est conduit à se demander ce qu'il y a encore d'aristotélicien chez le second successeur d'Aristote. L'appartenance à une école philosophique n'exigeait sans doute pas, dans l'Antiquité, de se conformer à une orthodoxie théorique rigide, mais il devait bien exister une forme de continuité à certains principes ou à certains résultats. Une telle continuité est bien identifiable. Il est de fait, comme David Furley l'a souligné, que Straton, pour lequel le monde est éternel, reste finitiste, géocentriste et continuiste:

² Voir par exemple le débat entre Sorabji (1988b) et Algra (1995) 195–221 sur le rôle du lieu résumé par Sorabji (1998) 210–11, n.30; et Sharples (1998) 56–59 et (2002) 113.

³ Voir Repici (1988) 117–42 sur la naissance de la "tradition" stratonienne chez Cicéron et Plutarque; dans le contexte du fr. **18**, Cicéron veut montrer "l'équivalence de toutes les opinions et le caractère de permanente obscurité des *principia* de toutes choses" (119). Il n'exprime pas une opposition de la physique de Straton à celle d'Aristote, mais au rôle de la providence dans le Stoïcisme (et à l'atomisme démocritéen); dans le contexte (*Academica* II 119–21), il n'oppose pas à Straton la thèse aristotélicienne de l'éternité du monde (que Straton acceptait sans doute) ni à Aristote la thèse de Straton du caractère autosuffisant de la nature (qu'Aristote accepte jusqu'à un certain point, notamment contre les Platoniciens). Voir Repici (1988) 127–28.

⁴ En employant τὸν κόσμον, Plutarque désigne un point de désaccord entre Straton et le Platon du *Timée* (32d, 34b). Voir Wehrli (1950) 54. Chez Théophraste (159 et 252 FHS&G), c'est explicitement le ciel qui est considéré comme un vivant et non le monde.

le corps et l'espace sont divisibles à l'infini (Sextus Empiricus, *Adv. physicos* II 155 = **36**).⁵ Il refuse ces "rêves de Démocrite" que sont les atomes (Cic., *Academica*, II 121 = **18**, 8) et n'accepte pas plus que des micro-vides internes aux corps (**30A**). Il était sans doute encore aristotélicien dans ce sens strict par tout ce sur quoi aucun témoignage ne nous a été transmis, bien que des titres figurent dans le catalogue de Diogène Laërce, son éthique et sa politique, et le fragment **15**, extrait de son traité *Sur l'antérieur et le postérieur* transmis dans le commentaire de Simplicius aux *Catégories*, manifeste une certaine virtuosité dans le maniement de l'aristotélisme scolaire. Il y aurait certes une hypothèse simple pour expliquer ses "critiques" de la physique aristotélicienne. Comme il a été suggéré, Straton peut avoir été directement en contact avec Épicure lui-même (ou avec ses écrits), lorsque celui-ci enseignait à Lampsaque entre 310 et 306.⁶ Mais Straton avait-il besoin de connaître Épicure ou l'épicurisme de cette façon? Il avait chez Aristote un recueil suffisant de thèses atomistes exposées et réfutées. Certains concepts de l'atomisme, dont la notion d'"expulsion" qui est au cœur des fragments sur le poids, sont déjà présents chez Aristote et Théophraste, on le verra. Il serait étrange que Straton n'ait rien su de l'épicurisme, mais, de fait, aucun témoignage ne dit explicitement qu'il ait été influencé par l'enseignement oral ou les écrits d'Épicure et, au regard des fragments sur le poids au moins, il n'y a pas besoin d'en faire l'hypothèse.⁷ On peut donc simplement penser que Straton a voulu poursuivre les recherches physiques du fondateur de l'école, avec ses moyens et dans l'environnement scientifique de son époque, en préférant, à la conservation des résultats, la continuité d'une recherche qu'il estimait fidèle ou l'approfondissement de certaines intuitions qui ne correspondent pas à l'Aristote "standard" que nous avons retenu mais qui n'en expriment pas moins un aristotélisme identifiable. En plus du socle de thèses aristotéliennes que nous avons mentionnées, qui rendent sa position unique et reconnaissable dans le milieu de la philosophie hellénistique, un autre point de continuité réside dans la pérennité d'une conception de la philosophie naturelle et de sa méthode dont Straton

⁵ Voir Furley (1985) 159: "On space, matter, and motion, he was anti-Epicurean"; Algra (1995) 67 n.102. On peut ajouter sans doute l'éternité du monde, dans la mesure où aucun témoignage ne dit explicitement le contraire, ce qui aurait constitué une crise majeure dans le paradigme philosophique du Lycée et une très forte critique de Théophraste. La thèse avait été soutenue avec force par ce dernier contre les arguments traditionnels à ce sujet (184 FHS&G). Voir Hankinson (1998) 188 et Sharples (1998) 130–42. Pour ces raisons au moins, Straton reste un "aristotélicien" au sens où l'entend Furley dans "The Cosmological Crisis in Classical Antiquity" (1986) 225. Nous y revenons plus bas.

⁶ Diogène Laërce, *Vies*, X 15. Voir Lautner (2004) 369.

⁷ Furley (1985) 160.

le physicien, comme son épithète l'indique (Diogène Laërce V 58 = **1**), reste le représentant (et même au sein du Peripatos le dernier représentant): à la différence des autres écoles philosophiques hellénistiques, le Peripatos considère que la physique a une finalité en elle-même, indépendamment de l'usage éthique qui peut en être fait et, de manière générale, que la vie théorique a une forme de supériorité sur la vie politique.⁸ Pour ce qui est de la méthode, si Straton voit dans les atomes des "rêveries" scientifiques, c'est que l'atomisme contrevient de ce point de vue à une exigence d'Aristote: juger les principes à ce qui en découle mais aussi à leur finalité, qui, dans le cas de la science physique, est ce qui apparaît à la sensation (*Du ciel* III 7, 306a11–17). L'intérêt de Straton pour l'observation empirique se marque dans de nombreux fragments sur le poids (Simplicius, *In Aristotelis Physica* CAG X, 916, 4–30 = **40**; *In Aristotelis De caelo* CAG VII, 268, 32–269, 14 = **49**) et Cicéron dans le témoignage cité plus haut (**18**) insiste lui aussi sur l'attention méthodique de Straton dans son enquête physique ("ipse autem singulas mundi partes persequens," l. 9–10).⁹

D'après les témoignages que nous avons sur le poids, Straton défend les trois thèses suivantes: (1) tous les corps sont pesants (même le feu); (2) tous les corps se meuvent vers le bas; (3) les corps plus lourds "expulsent" les corps plus légers vers le haut (il n'y a pas de mouvement centrifuge naturel). Résumé ainsi, le premier effet de cette "théorie" ou de ces thèses, conservées par les sources en raison de leur originalité, voire de leur parfum de scandale aux yeux d'un aristotélicien dogmatique, est une simplification considérable de la position aristotélicienne sur le lourd et le léger principalement exposée au livre IV du traité *Du ciel* et au chapitre 4 du livre VIII de la *Physique*. Straton propose une réforme de la dynamique aristotélicienne à partir d'une explication exclusivement mécaniste de l'étagement des quatre corps simples, étagement que, par ailleurs, il assume ou retrouve (terre/eau/air/feu), en faisant l'économie des causes finale et formelle qu'Aristote utilise dans l'explication du mouvement naturel, puisque l'expulsion relève de l'action de la seule cause motrice. La singularité de sa position réside, à première vue, dans le fait qu'elle reprend des thèses présocratiques (atomistes), elles-mêmes examinées et réfutées par Aristote dans le *De caelo*, ce qui suggère que Straton doit ou refuser les preuves d'Aristote ou répondre à ses réfutations. Cette singularité est nuancée par le fait que Straton poursuit un

⁸ Sharples (1998b) 275 n.34; (2006) 307. C'est peut-être sur ce point, suggère Robert Sharples, plus que sur la différence entre matérialisme et téléologie, que s'est jouée la fin du Peripatos. Glucker (1998) 313–14.

⁹ Repici (1988) 126; Algra (1995) 66 et la référence au fragment **28B** (Simplicius, *In Aristotelis Physica* CAG IX, 663, 2 sqq.).

réexamen de la physique d'Aristote entamé par Théophraste sur les questions du poids et de l'existence d'un cinquième élément. C'est donc aussi, voire peut-être exclusivement, par rapport à des débats en cours, internes à l'école que Straton prend position. Nous ne pourrions en évaluer l'intérêt que de manière extrêmement partielle, car on peut faire l'hypothèse sans trop de risque que la "théorie" de Straton sur le poids ne se réduisait pas à ces quelques thèses, conservées chez des auteurs, Cicéron, Thémistius et Simplicius, qui étaient, pour différentes raisons, plutôt mal intentionnés à l'endroit des épigones du Philosophe.

II. Les fragments **49** et **50B** de Straton dans le commentaire de Simplicius

Les fragments **49** et **50A, B, C, D** sont quatre témoignages qu'on trouve dans les textes suivants:

- 1/ le texte hébreu issu d'une source arabe de la paraphrase de Thémistius à un passage (277a23–b2) du chapitre 8 du livre I du *De caelo* (**50C**);
- 2/ une traduction latine par Moses Alatinus du XVI^e siècle largement corrigée par Landauer au début du XX^e siècle de ce même texte hébreu (**50D**);
- 3/ un extrait de la doxographie d'Aétius "sur les corps" (I 12, 7, p. 311, 23 Diels; Stobée, *Ecl.* I 14, 1h = **50A**);
- 4/ le commentaire de Simplicius au même chapitre 8 du livre I du *De caelo* (**49** et **50B**).

Wehrli (p. 19) propose de les utiliser pour reconstituer un traité *Du léger et du lourd* attribué à Straton par Diogène (Περὶ κούφου καὶ βαρέος V 59 = **1**). Dans l'édition de Robert Sharples, ils figurent sous la rubrique purement thématique *De pondere*. Il n'irait pas sans difficulté en effet de les attribuer à un traité. Si c'est dans le cadre d'un traité sur le léger et le lourd que Straton peut avoir eu des raisons d'aborder ces questions, on pourrait également penser à un traité *Sur le mouvement*, dont le titre ne figure pas dans le catalogue de Diogène mais qui est explicitement attribué à Straton par Simplicius dans son commentaire à la *Physique* (CAG X, 916, 13 = **40**, 12). La question de l'appartenance de ces extraits à un traité plutôt qu'à un autre constitue en elle-même un enjeu de la conception du lourd et du léger de Straton. Pour Aristote, en effet, l'étude du lourd et du léger relève aussi des discussions sur le mouvement naturel, car "nous disons que <quelque chose> est lourd et léger par le fait de pouvoir être mû *naturellement* d'une

certaine façon.”¹⁰ Pour Straton, au contraire, l’orientation du mouvement *naturel* d’un corps ne permet pas de différencier le lourd du léger: tous les corps sont pesants et, chez Simplicius au moins, sont mus *par nature* vers le bas (49, 1.9–10). Chez Straton, la définition de la qualité d’un corps “plus lourd” ou “moins lourd” s’émancipe de l’orientation du mouvement *naturel*, ce qui pourrait faire penser que Straton ait choisi d’aborder ces questions dans un traité “Du léger et du lourd,” mais, cette fois, c’est le couple d’opposés “léger/lourd” qui convient mal à la thèse de Straton selon laquelle tous les corps ont un poids ou sont lourds. Le terme “léger” (τὰ δὲ κοψότερα) se rencontre seulement dans le fragment 50A (et encore au comparatif), alors que Simplicius parle de “plus” ou “moins lourds” (50B).¹¹ En l’état, la question de l’attribution de ces fragments à un traité plutôt qu’à un autre est donc indécidable. Il est intéressant de remarquer sur ce point également que ce que nous avons conservé suggère que Straton n’a pas discuté du léger et du lourd dans les termes des platoniciens ou des atomistes dont les opinions sont rapportées par Aristote dans le traité *Du ciel* (IV 2): Straton tient que toutes les choses sont pesantes mais les fragments que nous avons ne nous permettent pas de dire s’il a entrepris d’expliquer par quelle cause (grandeur du corps, nombre des parties, rapport entre le plein et le vide dans le corps) une chose est plus lourde et une autre, plus légère. De ce point de vue, il se tient encore, comme on le verra, dans les limites d’une définition cinétique du plus lourd et du moins lourd, même si c’est un mouvement particulier, l’expulsion, qui permet de constater les différences de poids.

Ils ne sont pas les plus anciens, mais c’est aux fragments 49 et 50B que nous nous intéresserons d’abord, en vertu de leur longueur et du contexte des références à Straton. Dans la mesure où la détermination du sens et de l’étendue de ces fragments est inséparable de la démarche exégétique de Simplicius, nous examinerons ces deux fragments dans leur contexte que Wehrli avait exploité avec parcimonie. On s’intéressera ensuite aux fragments 50C et 50D, plus anciens, qui rapportent une opinion qui ne semble

¹⁰ *Du ciel* IV 1, 307b30–32. Nous soulignons. De fait, chez Aristote, le lourd et le léger sont envisagés dans les deux contextes différents du traité *Du ciel* IV et de *Physique* VIII 4. Dans la mesure où lourd et léger sont aussi des puissances (pour Aristote en tout cas), leur examen pourrait avoir été aussi conduit par Straton dans son *Περὶ δυνάμεων* mentionné par Diogène (V 59 = 1). — Précisons ici un point: nos fragments parlent de corps et non d’éléments; ils mentionnent bien pourtant les quatre éléments. Nous considérerons donc que ce qui est en jeu est l’explication du mouvement élémentaire, sans par ailleurs examiner la question du rapport entre ces “corps” et les qualités, chaud et froid, que Straton pose comme principes (voir le fragment 46).

¹¹ On notera que curieusement en 50C et 50D Thémistius ne parle pas du poids. Nous y reviendrons.

pas compatible avec **49** et **50B**. Ces deux sources, Thémistius et Simplicius, ont deux points communs: la référence à Straton est faite à l'occasion du commentaire du même passage du *De caelo*; elle est à chaque fois couplée avec une référence à Épicure.¹²

Les deux fragments **49** et **50B** sont extraits du commentaire de Simplicius au chapitre 8 du livre I du *De caelo*, 277a33–b9 (CAG VII, 267, 10–269, 28). Dans le lemme commenté, Aristote n'a pas directement en vue la cause du mouvement des éléments et il n'y est pas non plus question du lourd ni du léger. L'objet de *De caelo* I 8 est de démontrer l'unicité du monde, ce qui est établi à partir de l'unicité du mouvement naturel de chacun des corps simples, notamment la terre et le feu, vers un lieu unique, le centre ou la périphérie, selon un mouvement fini. S'il existait plusieurs mondes constitués d'éléments dotés des mêmes puissances, ils devraient se diriger vers un même centre et une même périphérie, de telle sorte qu'il n'y aurait en fait qu'un seul monde. Un des moments de l'argumentation consiste à réfuter l'objection selon laquelle les mouvements des corps simples vers le haut ou vers le bas seraient contraints (βία). Aristote s'attache en réalité à deux mouvements contraints, l'expulsion ou éjection (ἐκθλιψις, 277b2, 6), et le fait pour un élément d'être porté ou transporté par autre chose. Il attribue la paternité de cette explication du mouvement élémentaire à des auteurs anonymes (τινές, b2), puis il indique trois propriétés du mouvement élémentaire naturel incompatibles avec la thèse du mouvement par contrainte: la rapidité du mouvement du feu ou de la terre vers leur lieu propre s'accroît (1) en fonction de leur quantité¹³; et (2) à proximité de leur fin; enfin (3) quand la contrainte cesse, le corps revient où il était (dans son lieu propre). Pour ce qui est de l'identification des partisans anonymes de l'explication réfutée, on peut penser que si Aristote ne mentionne aucun nom, c'est qu'il veut seulement faire appel à un mécanisme particulier de mouvement contraint. Le passage suggère qu'il s'agit d'une physique pour laquelle le mouvement du feu vers le haut mais aussi de la terre vers le bas serait expliqué par une contrainte, expulsion, dans un cas, sorte de pression (des autres éléments?) vers le bas ou de choc, dans l'autre.¹⁴ Le terme d'ἐκθλιψις a orienté vers Leucippe et Démocrite tout comme la mention du

¹² Ce n'est pas le cas chez Aétius (**50A**) qui présente une doxographie sur les corps qui distingue Épicure, Démocrite et Straton.

¹³ *Physique* IV 8, 216a12–16; *Du ciel* I 6, 273b30–274a2.

¹⁴ De même, dans le traité *Du ciel* II 14, 297a13–14, Aristote mentionne "certains physiologues" qui font de la contrainte la cause du mouvement vers le bas, mais qu'il va suivre, à cette réserve près, pour justifier la sphéricité de la terre. La suite fait plutôt penser à Anaxagore.

fait que les deux mouvements, vers le haut et le bas, sont envisagés comme contraints; la thèse étant rapportée de manière anonyme et assez vague, le texte ne figure pas chez Diels-Kranz. Le rapprochement le plus éclairant, même s'il rapporte aussi une doctrine anonyme, est avec la cosmogonie de DK 67 A 24: l'expulsion y joue le rôle d'un principe cosmogonique de séparation et de tri mécanique, comme le crible, des éléments semblables ou homogènes, en grandeur, en poids, en forme.¹⁵

Pour Simplicius, la méthode d'Aristote dans ce passage consiste en une réfutation des positions opposées à celle qu'il faut démontrer (267, 16–17): "les corps élémentaires se meuvent ou bien conformément à leur nature, ou bien portés par une autre chose, ou bien expulsés les uns par les autres" (1.17–19). Simplicius distingue ainsi deux espèces du mouvement contraint, selon que le corps est porté par un autre et selon qu'il est expulsé; il restreint la portée du premier argument d'Aristote à la première espèce de contrainte; celle du second, à l'expulsion, quoiqu'il souligne que la réfutation utilisée contre la première espèce de contrainte puisse valoir aussi dans le cas de l'expulsion; il fait du troisième argument, très bref (*De caelo* I 8, 277b7–8), une réfutation commune aux deux espèces de contrainte. On pourrait attribuer ces distinctions, qui ne s'imposent pas à la lecture du texte d'Aristote, au souci de clarification formelle souvent affiché par Simplicius. Nous allons voir qu'elles ne sont pas inutiles car elles mettent en avant le caractère complexe du mécanisme de l'expulsion.

(1) (267, 19–28) Les éléments ne peuvent pas être portés par autre chose parce qu'une propriété du mouvement naturel s'y oppose: la rapidité du mouvement naturel d'un corps simple dépend de la grandeur du corps

¹⁵ Denis O'Brien (1981) 153 n.3 cite le fragment sur la cosmogonie atomiste (sans référence à un auteur particulier) de DK 67 A 24 (= Aetius I 4 2; Usener, *Epicurea* fr. 308) où les atomes les plus grands et les plus lourds restent en dessous, tandis que les plus légers, lisses et arrondis, c'est-à-dire aussi les plus chauds, sont expulsés (ἐξεθλίβετο) vers une région supérieure (pour former finalement la voute du ciel); la vitesse du mouvement de ces atomes vers le haut diminue à mesure qu'ils s'éloignent de ceux qui les ont poussés. Voir Bailey (1928) 94. Dans deux textes réunis chez DK 68 A 61 (*In Aristotelis De caelo commentaria*, CAG VII, 569, 5–9 et 712, 27–29 Heiberg), Simplicius mentionne le phénomène d'expulsion en l'attribuant à la fois à Démocrite et Épicure (nous y revenons plus bas). Voir aussi la cosmogonie de Leucippe (sans mention de l'expulsion mais du crible chez Diogène Laërce, IX 31–32 = DK 67 A 1; et DK 68 B 164). Le même terme d'ἐκθλίψις se retrouve dans le traité *Du ciel*, en IV 2, 310a7–11, sans que la référence aux atomistes soit explicite. Les deux textes de Simplicius cités dans DK 68 A 61 supposent que seul existe le pesant et qu'il se porte vers le milieu (sans pression), alors que, dans le texte du traité *Du ciel*, I 8, il est question d'un mouvement contraint vers le bas pour la terre elle-même. Nous revenons plus bas sur le terme ἐκθλίψις.

mû; or c'est justement le contraire qui aurait lieu si le corps était transporté par autre chose: si la cause du transport restait la même, la rapidité du mouvement dépendrait de la grandeur du corps transporté et serait plus petite pour un corps plus grand. Simplicius fait droit ici à une objection: l'accélération en fonction de la grandeur du corps caractéristique du mouvement naturel pourrait valoir dans le cas des corps transportés, si l'on supposait que la force de la cause qui transporte soit à chaque fois en rapport avec la grandeur du corps mû. Simplicius répond (1) que l'augmentation de la puissance de la cause n'est pas liée à l'augmentation de la grandeur du corps mû, tandis qu'une plus grande quantité de feu ou de terre se meut toujours plus vite; (2) que le mouvement contraint d'un grand feu vers le bas est plus lent que celui d'un petit feu. La présence de cette objection, qui n'apparaît pas chez Aristote, est intéressante car elle souligne une différence entre ces deux variétés du mouvement contraint, sur laquelle nous reviendrons plus loin.

(2) (267, 29–268, 17) C'est en abordant ce qu'il considère être la réfutation spécifique de l'explication du mouvement par expulsion que Simplicius rappelle les positions de Straton et d'Épicure (= **50B**):

[267, 29] Il montre ensuite que les éléments ne se meuvent pas non plus contraints par une expulsion des uns par les autres. <1> De cette opinion ont été après lui Straton et Épicure, [268, 1] qui ont pensé que tout corps a une pesanteur et se porte vers le milieu, et que c'est parce que les plus pesants s'affaissent que les moins pesants sont expulsés par contrainte par eux vers le haut; <2> c'est pourquoi si l'on enlevait la terre du dessous, l'eau viendrait au centre, et si l'on enlevait l'eau, l'air viendrait, et si l'on enlevait l'air, le feu. [268, 4]

Avant d'examiner la manière dont Simplicius fait intervenir ici cette référence, continuons de suivre son commentaire. Simplicius explique que, si les éléments ne peuvent pas être mus par expulsion, c'est en vertu de la seconde propriété mentionnée: alors que l'expulsion exigerait un ralentissement du corps expulsé à mesure qu'il s'éloigne du corps qui a fait pression sur lui (ce que l'on voit effectivement en DK 67 A 24), un élément va d'autant plus vite qu'il s'approche de son lieu propre. Simplicius ensuite applique aussi le premier argument à la réfutation de la thèse de l'expulsion, puis se demande pourquoi Aristote ne l'a pas fait. Cette question est assez étrange, car, encore une fois, Aristote ne semble pas spécialiser explicitement les arguments qu'il emploie à une version plutôt qu'à une autre du mouvement contraint. Simplicius suppose qu'il ne l'a pas fait ou bien pour ne pas être trop prolix ou bien pour éviter une objection: en effet,

au contraire du type de contrainte où un corps est transporté par un autre, l'expulsion implique qu' "un corps plus grand est toujours expulsé par un corps plus grand qui l'enveloppe et qui est d'une puissance plus grande," ce qui n'a pas lieu nécessairement dans le cas du premier type de contrainte (268, 15–17).¹⁶ La première réfutation conviendrait donc moins facilement à l'expulsion, qui, elle, suppose un rapport de grandeur entre corps expulsé et corps expulsant.

(3) (268, 17–31) Le troisième argument dit "commun" consiste à montrer que la notion de mouvement contraint suppose celle de mouvement et de lieu naturels: est justement contraint le mouvement par lequel un corps quitte son lieu naturel; dire qu'un corps se meut par contrainte, c'est aussi dire qu'il a un lieu naturel. Une théorie selon laquelle tout mouvement serait contraint exigerait qu'un corps puisse se mouvoir "semblablement vers les lieux opposés" (268, 26). Or, rappelle Simplicius, la terre se porte vers le haut par contrainte, et vers le bas, par nature, et le feu, à l'inverse.

Le commentaire linéaire du texte d'Aristote prend fin en 268, 31. Simplicius introduit ensuite trois développements extérieurs. Les deux premiers se présentent comme des réfutations, directes ou non, de l'opinion de Straton et d'Épicure.

(1) Simplicius revient d'abord sur la seconde partie, que nous avons notée <2> plus haut, du fragment **50B** (l. 4–8), en qualifiant de τεκμήριον le type d'argument invoqué; il identifie la véritable cause de ce phénomène: c'est l'ἀντιπερίστασις ou remplacement réciproque des corps épais et fins, qui explique le phénomène allégué de descente d'un élément au niveau inférieur laissé libre par un autre:

[268, 32] Quant à ceux qui fournissent en confirmation de ce que tous les corps se portent par nature vers le milieu, le fait qu'une fois la terre retirée du dessous, l'eau se porte vers le bas, et une fois l'eau, l'air, ils en ignorent la cause, qui est le remplacement réciproque.¹⁷ [269, 1] En effet quand des corps plus épais prennent la place de corps plus fins, les plus fins changent de place en prenant celle des plus épais, portés vers le bas du fait qu'il n'y a aucun vide et qu'un corps ne traverse pas non plus un corps. [269, 3]

(2) Simplicius identifie ensuite d'autres partisans de la thèse du mouvement par contrainte, outre Straton et Épicure, en citant un passage du *Timée* de Platon. C'est de ce passage du commentaire qu'est issu le fr. 50

¹⁶ Nous suivons ici Hankinson (2004) n.449, 146–47.

¹⁷ Le passage est cité par Usener, *Epicurea*, "De motu," 197, 2.

de Wehrli, auquel l'édition de Robert Sharples a agrégé le développement précédent (268, 32–269, 3) pour former le fragment **49**:

[269, 4] Mais il faut savoir que Straton et Épicure ne sont pas les seuls à avoir dit que tous les corps sont pesants et se portent par nature vers le bas, et contrairement à la nature vers le haut, mais Platon aussi savait que <cette opinion>¹⁸ était soutenue et il la réfute, en estimant que c'est à tort qu'on parle de haut et de bas dans l'univers et en refusant que les choses pesantes soient dites telles parce qu'elles se portent vers le bas. Voici ce qu'il écrit dans le *Timée*: "Il n'est en aucune façon correct de penser que, par nature, il existe deux lieux contraires qui ont partagé le tout en deux, l'un en bas, vers lequel se porte tout ce qui possède une certaine masse corporelle, l'autre en haut, vers lequel tout ce qui va le fait contre son gré."¹⁹ En effet ceux qui disaient que les atomes sont pesants parce qu'ils sont denses, disaient qu'ils sont aussi causes pour les composés de leur poids, comme le vide <est cause> du léger. [269, 14]

Simplicius se fait historien de la philosophie et un peu polémiste. En professeur, il donne les opinions d'autres philosophes pré-platoniciens, les atomistes démocritéens, sur ces mêmes questions du lourd et du léger, du haut et du bas: Straton et Épicure n'ont aucune originalité; ils s'inscrivent dans une tradition ancienne, déjà objet des critiques de Platon. Il oppose aussi Platon à Aristote d'une part, et de l'autre, Platon à Straton et Épicure. On pourra s'étonner que Simplicius n'ait pas cité ce passage du *Timée* avant, puisqu'il permet d'attribuer à des atomistes pré-platoniciens les thèses critiquées dans le *De caelo*, mais de fait Simplicius ne dit pas ici qu'ils aient eu recours à l'expulsion pour expliquer le mouvement vers le haut (et le rapprochement avec Straton et Épicure ne porte pas sur ce point). En citant Platon, Simplicius introduit trois éléments doxographiques:

- 1/ Platon a lui-même critiqué la distinction du haut et du bas par nature dans le cosmos, contre ce que défendra Aristote qui critiquera précisément Platon à ce sujet.²⁰
- 2/ Mais, en accord en cela avec Aristote, Platon a réfuté la position qui est devenue celles de Straton et d'Épicure, selon laquelle un corps ne va en haut que "contre son gré" ou, dans le vocabulaire d'Aristote, par contrainte et contre nature.

¹⁸ Le texte est corrompu. Nous adoptons la lecture de b et c.

¹⁹ 62c5–8. Nous ne suivons pas la traduction de Robert Sharples qui donne un sens adverbial à τὸ πᾶν.

²⁰ Voir *Du ciel* IV 1, 308a17–29.

- 3/ Simplicius explicite cette allusion de Platon en attribuant à des atomistes la thèse selon laquelle les atomes sont pesants en vertu de leur densité et sont causes aussi de la pesanteur des corps composés, tandis que le vide est cause de la légèreté des composés (thèse que rappellera et critiquera Aristote au livre IV du *De caelo*).

(3) Enfin, Simplicius formule lui-même une objection à l'endroit de la théorie d'Aristote sur les lieux du haut et du bas. Elle n'implique pas une critique de la théorie d'un haut et d'un bas absolus, mais elle met clairement en cause l'application de la définition aristotélicienne du lieu aux lieux propres des éléments dans le cosmos, en demandant *où* exactement sont le haut et le bas absolus. Simplicius enfin termine son commentaire du passage en soulignant le caractère "partiel" de la définition aristotélicienne du lieu et en justifiant ainsi les nombreuses objections auxquelles elle s'est exposée (à l'intérieur et à l'extérieur du Peripatos).

Revenons à présent au sens général du commentaire de Simplicius et à la manière dont il fait intervenir les références à Straton.

(a) En citant Straton et Épicure, Simplicius fait d'une certaine manière son travail de commentateur: il identifie les tenants des thèses présentées de manière anonyme dans le *De caelo* et réfutées par Aristote, même si, évidemment, ce n'est ni à l'un ni à l'autre que pensait Aristote. En les citant, il introduit aussi des thèses *de facto* critiques envers la thèse d'Aristote, mais pour, à son tour, les critiquer, ce qui revient de la part de Simplicius à montrer que ces thèses critiques de Straton et d'Épicure ne sont pas pertinentes; la question est bien plutôt pour lui celle de la définition du lieu par laquelle Simplicius termine et qu'il abordera thématiquement dans le *Corollarium de loco*. Du point de vue du néoplatonicien Simplicius, élève de Damascius, cela revient à dire que la vraie postérité philosophique d'Aristote n'est pas à chercher chez ses successeurs à la tête du Peripatos (qui ne l'ont pas compris et l'ont critiqué sans raison), mais du côté de l'harmonie des philosophies platonicienne et aristotélicienne que lui-même contribue d'orchestrer dans son commentaire.²¹

²¹ Chez un commentateur généralement porté à les défendre, cette partie de son commentaire est assez critique à l'égard des théories d'Aristote. Voir Hankinson (2004) 148 n.460. Simplicius mentionne les théories de Straton, d'Épicure, d'atomistes présocratiques, il ajoute ses propres critiques sur le caractère "partiel" de la définition aristotélicienne du lieu, et, sous le masque de l'historien de la philosophie, il introduit une critique implicite de Platon qui n'a pas reconnu le haut et le bas au sens absolu. Ces critiques d'origines très différentes mettent à mal la théorie aristotélicienne, *a fortiori* si sa méthode dans le passage commenté est bien d'établir sa thèse en réfutant les thèses opposées. De ce point de vue, on notera, ce qui est assez rare chez le commentateur néoplatonicien, que la traditions des

(b) Les deux mentions du nom de Straton que nous rencontrons ici sont les deux seules dans l'ensemble du commentaire de Simplicius au *De caelo*, ce qui ne peut pas manquer d'étonner. Dans le commentaire du livre IV, lorsqu'il aborde le chapitre doxographique sur le lourd et le léger où Aristote fait encore état du mouvement par expulsion (IV 2, 310a10), Simplicius n'évoque pas le nom de Straton, mais celui de Démocrite. Par ailleurs, Simplicius ne cite textuellement ni Straton ni Épicure ici, ce qu'il aurait fait s'il avait pu. Cela suggère que Simplicius n'avait pas accès aux textes de Straton et qu'il se sert plutôt ici d'une sorte de manuel doté d'un classement par notion où le terme *ἐκθλιψις* est répertorié dans une rubrique particulière, avec deux illustrations, Straton et Épicure. On peut penser que la rubrique est ancienne, puisque c'est d'une manière assez semblable, avec les mêmes exemples et sur le même passage du *De caelo* que procède la paraphrase de Thémistius (**50C et 50D**). Simplicius aurait pu la connaître, quoique, nous allons le voir, leurs comptes rendus de l'opinion de Straton et d'Épicure soient assez différents.

(c) Dans le premier passage cité (**50B**), Simplicius considère que l'opinion de Straton et d'Épicure telle qu'il la rapporte est une illustration de la thèse réfutée par Aristote selon laquelle les éléments se meuvent par expulsion. Il ajoute, dans le second, que le mouvement vers le bas est "par nature" (268, 32; 269, 5 = **49**, 1. 10), ce que veut confirmer apparemment la preuve apportée en **50B** et reprise en **49**. Si tel est le cas, l'opposition entre Aristote d'un côté, Straton et Épicure de l'autre semble réduite par le fait que tous maintiennent la différence entre mouvement naturel et mouvement contraint. S'ils la distinguent du mouvement naturel, Straton et Épicure doivent eux aussi considérer que l'expulsion est un mouvement contraint (**50B**, l. 5); à ce titre, il est impossible de leur objecter que l'expulsion ne rend pas compte des propriétés du mouvement naturel. Au moins deux des trois propriétés aristotéliennes du mouvement naturel (et l'on serait tenté de dire les trois) conviennent au mouvement élémentaire tel qu'il est envisagé par Straton: (1) le fragment **40** (extrait du commentaire de Simplicius à *Physique* V 6 230b21–28) montre, selon Simplicius en tout cas, que Straton acceptait la thèse selon laquelle le mouvement vers le bas devient plus rapide à l'approche du lieu propre, c'est-à-dire du bas (et qu'il lui apportait des confirmations issues d'observations); (2) comme le montre la seconde partie <notée par nous 2> du fragment **50B**, lorsque cesse la contrainte exercée sur un corps qui le maintenait artificiellement

atomistes fait, de manière très ponctuelle, cause commune avec Platon, dans une coalition hétéroclite anti-aristotélienne.

au dessus d'un autre (l'expulsion), c'est-à-dire lorsque le corps du dessous se retire, le corps redescend et prend sa place naturelle. C'est donc Simplicius qui, pour une part, produit lui-même l'opposition entre Aristote et Straton. C'est d'autant plus le cas que, en un sens, Straton et Épicure ne sont pas de bonnes illustrations de la thèse que veut réfuter Aristote en *De caelo* I 8: même si cette thèse est très peu détaillée, il apparaît qu'elle affirme que *tous* les mouvements, vers le haut et vers le bas, sont contraints, ce que ne soutiennent ni Épicure ni Straton selon Simplicius.²² En d'autres termes, ce qui a une importance pour apprécier la manière dont se situe Straton par rapport à Aristote, la thèse que soutient Straton *n'est pas* celle réfutée par Aristote dans le *De caelo*; elles ne se recoupent que sur le recours à l'expulsion.

Une difficulté analogue se rencontre dans les fragments **50C** et **50D**. Le commentateur résume d'abord, correctement nous semble-t-il, l'ensemble des thèses que veut réfuter Aristote dans notre passage du *De caelo* I 8 277a33–b9: (1) il n'y a pas de mouvement naturel des éléments; (2) le mouvement de tous les éléments est contraint; il résulte de la force ou d'une poussée; (3) il n'y a donc pas de lieu naturel et propre à chaque élément. Ces trois thèses, qui sont ici reprises plus fidèlement que chez Simplicius, nient toute forme de mouvement naturel, même des corps pesants vers le bas, et elles ruinent en effet la démonstration aristotélicienne de l'unicité du monde. La difficulté des deux extraits réside dans les exemples donnés dans la seconde partie de chaque texte (**50C**, 7–9 de la traduction et **50D**, 5–8 du texte latin). L'illustration donnée dans le cas du feu dans la traduction de l'hébreu (en acceptant la conjecture de A. Rapoport-Albert) convient en effet à cette thèse: que le feu aille en haut ou en bas, ce sera sous l'effet d'une contrainte. Mais, à première vue, cette illustration, comme la thèse (1) elle-même en fait, ne s'accorde pas avec l'affirmation répétée dans le commentaire de Simplicius du caractère naturel du mouvement vers le bas des corps pesants. Il en va de même avec la traduction latine (en conservant le texte d'Alatinus: "terra vero deorsum"). Si l'on conserve les textes hébreu et latin sur lesquels la traduction de l'édition de Robert Sharples est basée, trois solutions semblent possibles pour expliquer cette contradiction entre le témoignage de Simplicius et les deux versions de la paraphrase de Thémistius: (1) comme Robert Sharples le dit en note (**50C**, note 4), chez Thémistius, l'auteur a en vue la contrainte à exercer sur le feu

²² Voir en I 8, 277b1–2, b3 la mention du mouvement contraint de la terre vers le bas. La réfutation porte sur les deux mouvements du feu et de la terre.

pour qu'il aille en dessous de la terre par exemple ou d'un autre élément. En d'autres termes, le mouvement vers le bas du feu ne serait pas celui qui apparaît dans le τεκμήριον (le feu prend la place de la terre), mais un mouvement artificiel par lequel il s'agirait de mettre le feu sous la terre. C'est effectivement un cas de mouvement contraint peu contestable, mais il n'est pas certain qu'il constitue un cas de litige. (2) Une seconde solution consisterait à penser que nous interprétons mal (et Simplicius le premier) le τεκμήριον, généralement pris pour illustrer le caractère naturel du mouvement vers le bas d'un corps pesant quand rien n'y fait obstacle.²³ On pourrait penser en effet que le mouvement vers le bas du feu ou de tout autre élément, sauf de la terre, est effectivement contraint, pour autant que ce mouvement suppose que les autres corps se retirent et cessent d'exercer sur lui la pression qui l'a expulsé du centre (comme le suggère en un sens aussi l'indice fourni dans le fragment 49). Straton aurait ainsi essayé de donner une explication *complète* non seulement du mouvement vers le haut mais aussi du mouvement vers le bas: tous les éléments ont un poids, mais le poids n'est pas une cause suffisante du mouvement vers le bas, car le mouvement a toujours lieu dans un milieu; comme la pression ou l'expulsion est une cause motrice du mouvement vers le haut, la privation de cette pression en est une aussi du mouvement vers le bas. L'hypothèse suppose que c'est Simplicius qui aurait ajouté toutes les références à la nature, en considérant que, puisque l'expulsion est un mouvement contraint, le mouvement vers le bas devait être naturel. Cette hypothèse demande en outre de considérer l'absence de pression comme étant elle-même une force ou une pression, puisque c'est bien une contrainte positive que mentionnent les fragments 50C et 50D. (3) De manière plus générale, on peut supposer qu'un des deux commentateurs, Thémistius ou Simplicius, fait un compte rendu faux de la position de Straton (et d'Épicure) — Simplicius en se référant au caractère naturel du mouvement vers le bas (et en interprétant mal le τεκμήριον), Thémistius en estimant que le mouvement vers le bas du feu (ou de la terre, dans la traduction latine) est lui aussi contraint. Un élément en faveur de la version de Simplicius est le fait que, chez Épicure, nous savons que c'est le poids propre des atomes qui est cause de leur mouvement vers le bas, et non une contrainte extérieure (*Lettre à Hérodoté*

²³ Ce τεκμήριον serait de ce point de vue une bonne illustration de la conception classique de la pesanteur chez les anciens, telle qu'elle a été formulée par Zeller et telle que O'Brien la critique avec virulence. Voir O'Brien (1981) ch. 13 et Furley (1983a) 91–92 qui rappelle l'ancienneté de la balance.

§ 61 “κάτω διὰ τῶν ἰδίων βαρῶν”; dans DK 68 A 47: Aétius I 3 18 et Cic. *De fato* XX 46). En outre, le τεκμήριον qui ne figure pas chez Thémistius et que Simplicius n’a pas inventé plaide pour la thèse du caractère non contraint du mouvement vers le bas. Dans ces conditions, on serait tenté de suivre Simplicius en formulant sa position de deux façons: pour Straton et Épicure, le mouvement des éléments vers le bas (ou le centre) a pour cause leur poids; le mouvement des éléments vers le bas (ou le centre) est “conforme à la nature” ou “par nature.” La version de Thémistius procède peut-être de la volonté de conformer les positions de Straton et d’Épicure à la thèse que critique Aristote dans le texte de *De caelo* I 8 et qui suppose, on l’a vu, que tout mouvement est contraint.²⁴

Nous examinerons maintenant brièvement chacune des principales notions employées par Simplicius: *ekthlipsis*, *tekmèrion* et *antiperistasis*.

III. L'*ekthlipsis*

Nous avons distingué deux parties dans la composition du fragment **50B**:

- 1/ la première (notée <1> *supra*) relève directement d’une théorie du poids: tout corps est pesant; tout corps se dirige (par nature) vers le centre (mouvement centripète); si des corps se meuvent vers le haut, c’est qu’ils sont “moins lourds” et donc expulsés vers le haut par les “plus lourds” qui sont portés en bas;
- 2/ la seconde relève d’une confirmation, énoncée sous la forme d’une conséquence au mode hypothétique, qui sera appelée plus bas (= **49**) par Simplicius un τεκμήριον.

Avant de poursuivre l’examen des thèses sur le poids, nous voudrions nous intéresser à la notion d’ἐκθλιψις, “éjection” ou “expulsion” (**50B**, l. 1 et 5).²⁵ Ni dans ce passage ni dans le fragment **49**, Simplicius ne distingue Épicure de Straton. On peut supposer que, sur ces points très précis, les deux philosophes adoptaient, aux yeux de Simplicius, la même position.

En réalité, on ne rencontre pas cette notion dans les *Lettres* d’Épicure appliquée à la cause du mouvement vers le haut. L’une des originalités de

²⁴ Ajoutons que, comme on l’a vu, le témoignage de Thémistius se caractérise par son absence de toute référence au poids des éléments, ce qui pourrait bien justifier l’appel de sa part à la contrainte pour expliquer le mouvement vers le bas, à moins qu’il ne considère le poids lui-même comme relevant de la “vis,” de l’ “impetus” ou de l’ “impulsus.”

²⁵ On retrouve un terme latin de même sens, *extrusio*, dans la correction de Landauer à la version latine (d’Alatinus) de la traduction en hébreu du commentaire de Thémistius au traité *Du ciel* I 8.

l'atomisme d'Épicure puis de Lucrèce fut de dissiper, peut-être sous l'effet des critiques d'Aristote, certaines difficultés de la théorie démocritéenne du poids et du mouvement des atomes. On peut penser que la position à laquelle se réfère Aristote en *De caelo* I 8 est une thèse démocritéenne pour laquelle les corps (ou les atomes) ont un poids et se meuvent sous l'effet de deux mouvements, contraints dans le vocabulaire d'Aristote, le choc et l'expulsion (voir aussi DK 67 A 16 et 68 A 47). Dans la *Lettre à Hérodoté* (§61), on l'a vu, les atomes sont pesants et, en dehors des mouvements provoqués par les collisions, se meuvent vers le bas (non pas vers un "milieu" ou un "centre," comme le dit Simplicius, ce qui serait incompatible avec un univers infini). Lucrèce (II, v. 184–215) adopte cette thèse en l'explicitant: si les flammes montent dans l'air, ce n'est pas en vertu de leur propre force, c'est que quelque chose momentanément les y pousse ("*expressae*," v. 204), tandis que leur poids les ramène vers le bas. Pour expliquer le phénomène, Lucrèce utilise l'expérience de la pression exercée par des hommes sur du bois pour le maintenir sous l'eau: le mouvement du bois vers la surface de l'eau ne vient pas d'une force intrinsèque au bois mais de la pression de l'eau, pas plus que celui du feu vers le haut ne vient du feu lui-même. Lucrèce dans le passage ne précise pas d'où vient la pression qui est la cause du mouvement momentané du feu vers le haut, tandis que d'autres feux, ceux du soleil par exemple, tombent vers la terre. L'image du bout de bois remontant à la surface de l'eau contre toute contrainte illustre parfaitement le phénomène de l'expulsion.

Le terme d'ἐκθλιψις lui-même est attesté chez Épicure deux fois: dans la *Lettre à Hérodoté* (§53), dans le cadre de la critique de l'explication démocritéenne de la voix, qui suppose pour Épicure "l'expulsion" de particules consécutive à un coup. Dans la *Lettre à Pythoclès* (§109), le terme intervient dans un contexte proche de celui qui est le sien chez Simplicius. Épicure explique en effet que la glace ou la congélation de l'eau résulte de la réunion d'atomes de forme irrégulière et anguleuse, ce qui se produit ou bien par "expulsion" des atomes ronds présents dans l'eau, ou bien par ajout d'atomes irréguliers et anguleux à ceux déjà présents dans l'eau, une fois que les atomes ronds ont été "expulsés." Il n'est pas fait mention du poids, mais de la forme des atomes: les atomes ronds, c'est-à-dire aussi les atomes chauds,²⁶ sont ceux qui peuvent le plus facilement être expulsés hors de l'eau et qui, par leur absence, refroidissent l'eau et produisent la glace; l'expulsion est ici un processus explicatif de la séparation des atomes distingués selon leur forme, et d'homogénéisation d'un agrégat.

²⁶ DK 67 A 15; DK 68 A 101, 106.

Si Simplicius emploie ce mot, c'est évidemment parce que c'est celui qu'Aristote utilise dans le passage commenté de *De caelo* I 8, où il rapporte, on l'a vu, l'opinion de certains atomistes. De fait, chez Aristote, le terme est très souvent utilisé, de manière technique, pour désigner des phénomènes d'expulsion dans des contextes doxographiques rapportés aux atomistes. En plus de notre texte du *De caelo* I 8 et de IV 2, 310a3–13 (= DK 68 A 60) déjà cité, il intervient dans l'explication démocritéenne de la respiration pour désigner le risque de l'expulsion du chaud ou de l'âme hors des poumons sous l'effet de ce qui enveloppe et contracte le corps (*De la respiration*, 471b31, 472a6 = DK 68 A 106; *De anima* I 2, 404a11): la respiration, soit l'inspiration d'un air extérieur, permet que l'âme ou le chaud ne soit pas complètement expulsé au dehors, ce qui n'est possible que jusqu'à la mort, identifiée à une sortie de l'âme sous l'effet de la pression de ce qui entoure le corps.²⁷

Il est facile de supposer à partir de là que le terme a été emprunté par Aristote aux atomistes et que ces derniers l'avaient déjà utilisé dans des contextes différents (explication de la respiration, du mouvement ascendant des atomes ou des corps notamment) en vertu de la richesse du phénomène mécanique qu'il désigne et de sa polyvalence d'usage.²⁸ L'expulsion désigne un mouvement assez complexe, comme on l'a vu, puisqu'il est double: il comporte, d'un côté, une pression (la *θλιψις* elle-même), exercée par un corps externe plus lourd sur un corps susceptible d'être comprimé²⁹; de l'autre, l'*expulsion* proprement dite du corps comprimé hors de son lieu initial (cas du mouvement ascendant du feu) ou d'une partie de ce corps hors du corps (cas de la respiration). Elle exige aussi une certaine proportion entre le corps expulsé et le corps qui expulse, nécessairement plus grand ou puissant, comme Simplicius le remarquait dans son commentaire (268, 15–17). Enfin elle permet une séparation des corps de même poids ou de même figure (atomes sphériques, chauds), comme c'est visiblement le cas chez Straton chez Épicure (dans l'explication de la congélation) et dans le fragment cosmogonique cité de DK 67 A 24.

La complexité de ce mouvement a intéressé Aristote puisqu'il l'emploie lui-même, pour décrire différents phénomènes, et en dehors de toute

²⁷ En plus des passages cités *supra* en note, voir chez Démocrite DK 68 A 153 (dans l'*Histoire des animaux* d'Élien, XII 18, au sujet de l'explication de la croissance des bois chez les cerfs).

²⁸ Voir Morel (1996) 173–76 sur l'unité de la physique et la question du sens de l'analogie démocritéenne entre phénomènes macroscopiques et atomiques.

²⁹ C'est le verbe *θλίβεσθαι* qui est utilisé par Archimède dans le *De corporibus fluitantibus* ou on a lu le "Principe d'Archimède." Voir, par exemple, le Postulat 1, III, 6, 2–8..

référence aux atomistes³⁰: l'expulsion ou émission de la semence dans le traité de la *Génération des animaux* (III 5, 755b15) ou encore du lait dans l'*Histoire des animaux* (III 20, 522a19–20). On pourrait ici multiplier les exemples. Il est cependant évident qu'Aristote n'a pas toujours fait jouer à ce terme la fonction qu'il a chez les atomistes ou dans des contextes liés aux doctrines atomistes. Il y a un usage aristotélicien de l'expulsion qui est plus descriptif que proprement dynamique. On peut le remarquer dans quelques passages des *Météorologiques* notamment, qui manifestent à la fois une proximité de façade avec le mécanisme de l'expulsion attribué à Straton et l'impossibilité qu'il pouvait exister pour Aristote, même dans un contexte aussi mécanique que celui des *Météorologiques*, à faire jouer un véritable rôle causal à l'expulsion. Aux chapitres 3 et 4 du livre I, Aristote explique un certain nombre de phénomènes tels que les étoiles filantes ou différentes flammes visibles dans le ciel qui ont lieu dans la région de l'air et de ce qu'il appelle ici non le feu mais plus exactement le "combustible" issu de l'exhalaison sèche remontée de la terre (I 4, 341b18–20). Ces flammes peuvent être produites par la combustion de parties du combustible provoquée par le mouvement auquel le combustible est soumis par la sphère supérieure. Mais l'air aussi peut être à l'origine de ces phénomènes, car, au sein de l'air, sous l'effet du froid, certaines parties se condensent et gagnent la région de l'eau, tandis que, en même temps, d'autres parties chaudes sont "expulsées" vers le haut, vers le combustible, produisant ainsi des flammes. L'air est donc en permanente transformation d'un côté en eau par condensation produite par le froid, de l'autre en flamme par "expulsion" du chaud (I 3, 341a4–6; 4, 341b36–342a1). Le fait qu'il s'agisse d'une expulsion causée par une condensation justifie que le mouvement de ces flammes soit dirigé vers le bas, comme dans le cas des éclairs. Le terme d'ἐκθλιψις est aussi utilisé comme terme technique pour désigner l'expulsion de la chaleur (et de l'humide) dans la solidification qui a lieu sous l'effet du froid (*Génération des animaux*, V 3, 783a16; *Parties des animaux*, II 4, 651a8–9; *Météorologiques*, IV 8, 385a25). À deux reprises, Aristote, pour expliquer que l'expulsion produise un mouvement vers le bas, donne l'image d'un noyau de fruit pressé entre les doigts (I 4, 342a10: ὥσπερ οἱ ἐκ τῶν δακτύλων πυρῆνες; II 9, 369a19–24: οἶον οἱ πυρῆνες οἱ ἐκ τῶν δακτύλων ἐκπηδῶντες). Les deux expressions suggèrent l'image d'un noyau (glissant) qui échappe des

³⁰ On notera qu'Aristote ne mentionne pas l'expulsion en *Physique* VII 2, 243a15–18 quand il distingue les quatre types de "mouvement de transport par autre chose" auxquels sont réductibles tous les mouvements selon le lieu: ἔλξις, ὥσις, ὄχησις, δίνησις. L'expulsion doit être une variété composée à partie de la poussée (ὥσις).

doigts et va vers le haut, alors qu'il est lourd, de la même manière que ces flammes se dirigent vers le bas, quoiqu'elles soient chaudes et de nature à se diriger vers le haut. Le terme propre en grec pour désigner l'expulsion du noyau hors d'un fruit, ἐκπυρηνίζειν, se rencontre dans le traité du vide (IV 7, 214a33–b1): contrairement à ce qu'affirment les atomistes, la compression ou le resserrement d'un corps est explicable sans affirmer l'existence du vide, mais par simple "expulsion" des parties internes, comme l'air.³¹ C'est ce même verbe qu'on retrouve dans le fragment **50A** d'Aétius (avec οἶον). Il signifie, plus clairement que le terme d'expulsion, que le corps moins lourd ou plus léger, est expulsé *du* corps plus lourd qui a pris sa place.

S'il y a bien une parenté terminologique et l'on serait tenté de dire également physique entre les phénomènes décrits dans ces passages des *Météorologiques* et ceux attribués à Straton, il reste que l'on voit bien aussi les différences:

- 1/ chez Aristote, l'expulsion des flammes, tels que les éclairs ou les étoiles filantes, ne produit pas un mouvement vers le haut, mais vers le bas, ce qui constitue justement la difficulté à expliquer;
- 2/ s'il y a une difficulté ici, comme le précise Aristote (I 4, 342a15–16 et II 9, 369a20–21), c'est que, *selon la nature*, le chaud se dirige vers le haut.

En d'autres termes, l'expulsion n'est nullement la cause du mouvement vers le haut des corps plus légers, mais la simple description de la sortie hors de l'air en voie de condensation du chaud se dirigeant vers le bas.

Après avoir évoqué les usages de l'expulsion chez Épicure, chez Démocrite, dans les contextes doxographiques d'Aristote et dans les *Météorologiques*, revenons maintenant à Straton.³² Les textes précédents ont permis de distinguer deux types d'expulsion: centrifuge, chez les atomistes, plutôt centripète ou en tout non productrice d'un mouvement vers

³¹ Voir le même phénomène expliqué dans le *Problème XXV* 8, 938b14–24: si les outres contiennent plus que le tonneau, c'est que l'eau du tonneau contenait beaucoup de poches d'air (et non de vides) qui ont été "expulsées" lorsque l'eau a été transvasée dans les outres, libérant ainsi de la place pour ajouter de l'eau. L'auteur signale que le même phénomène se produit davantage avec le vin qui contient plus d'air que l'eau.

³² A l'époque hellénistique, il y a donc au moins deux partisans d'une théorie de l'expulsion pour expliquer le mouvement centrifuge, mais cette revue serait incomplète sans évoquer la question discutée de la présence d'une théorie de l'expulsion chez les Stoïciens. Voir sur ce point Wolff (1988) notamment 508–9 et 530–32 qui identifie chez ces derniers "a concept of buoyancy which was much more sophisticated than e.g. that of the Epicureans" (531) du fait que la pesanteur n'était pas conçue chez les Stoïciens comme une activité, mais comme une "inertie et une passivité" (530).

le haut dans les *Météorologiques*. On ne manque pas de sources desquelles Straton aurait pu s'inspirer pour forger son propre concept d'expulsion, selon que l'on aura une lecture internaliste (Aristote) ou externaliste (Épicure, les atomistes via Aristote) de ses conceptions sur l'expulsion. Ajoutons que Théophraste avait déjà utilisé le terme, sans lui faire jouer le même rôle que Straton (*Du feu*, 8.6 et 15.7; *Des odeurs*, 4. 24, 3–4). Si Straton l'a employé, c'est intentionnellement, pour mettre à profit l'originalité et le caractère économique du mécanisme d'expulsion, mais ce n'est sans doute pas pour occuper la place de la théorie atomiste critiquée par Aristote.

La parenté des doctrines est frappante, et justifie le rapprochement avec Épicure effectué par Simplicius, si l'on compare nos deux fragments **49** et **50B** aux deux passages où Simplicius rapporte les théories démocritéennes sur le lourd et le léger (DK 68 A 61):

Ceux qui suivent Démocrite et Épicure ensuite disent que tous les atomes, étant de nature semblable, ont un poids; mais, du fait que certains sont plus pesants, les plus légers se portent vers le haut, poussés par ceux-là qui se mettent en dessous; et c'est ainsi qu'ils disent que certaines choses semblent légères, et d'autres, pesantes (Simplicius, *In Aristotelis De caelo commentaria* CAG VII, 569, 5–9 Heiberg).

Ceux qui suivent Démocrite et ses partisans pensent que toutes choses ont un poids et que c'est par le fait d'avoir un poids moindre que le feu, expulsé par ce qui l'entoure, se porte en haut, et que c'est pour cela qu'il semble léger. Il leur semble que seul existe le pesant et que toujours celui-ci se porte vers le milieu. (*In Aristotelis De caelo commentaria* CAG VII, 712, 27–29 Heiberg)

Sur la critique du léger, le sens de ces deux fragments n'est pas sans rapport avec la position attribuée à Straton sur le poids. Le résultat de l'explication atomiste est une critique de l'appellation "léger": le léger est ce qui "*semble*" léger, et non pas ce qui est léger. Pour Straton aussi, le léger, qui n'est pas nommé, on l'a vu, est seulement du "moins lourd" ou du "plus léger" (**50A**); il n'est pas absolument léger et ne se dirige pas par nature vers le haut. Plusieurs différences apparaissent cependant: dans le premier texte, c'est d'atomes, et non de corps qu'il est question; dans le second, c'est uniquement le feu qui est "expulsé" et "semble léger"; dans aucun des deux, n'apparaît la précision selon laquelle si les corps pesants se portent vers le bas, c'est "par nature" ou "selon la nature" qu'ils le font (**49**, 1 et 10), et "contre nature" (**49**, 10) ou "par contrainte" (**50B**, 5) qu'ils se portent vers le haut. Comme le remarque Gottschalk après Diels, les témoignages attribuent souvent à Straton l'usage des clauses "par nature" et "contre

nature,” ce que fait Simplicius aussi contre Thémistius.³³ On a vu que, de ce point de vue, la thèse attribuée à Straton par Simplicius pouvait formellement admettre deux et sans doute trois des propriétés des mouvements naturels utilisées dans ses critiques par Aristote (l'accélération vers le lieu propre et l'existence même d'un lieu propre). Nous reviendrons plus bas sur la difficulté de la référence à la nature dans ce contexte. Le τεκμήριον mentionné dans nos deux fragments **49** et **50B** maintient aussi l'étagement des éléments dans l'ordre d'Aristote.

S'agissant d'une comparaison avec les atomistes, un dernier point reste à examiner, celui du rapport du mécanisme de l'expulsion avec le vide, ce qui permettra d'essayer de préciser ce qu'il faut entendre par expulsion. Pour qu'il puisse y avoir expulsion, il faut supposer que les corps (ou les atomes) se partagent un même espace limité et s'y distribuent verticalement selon leur poids respectif. Si les corps lourds ne sont pas au même endroit que les moins lourds, il n'y a aucune raison que les moins lourds soient expulsés. On peut ensuite distinguer deux modèles d'expulsion, externe et interne:

- 1/ la première procède par débordement: un élément moins lourd cède sa place en bas à un autre plus lourd et passe au dessus en le contournant par sa périphérie (cas d'un bloc de pierre qui se porte vers le bas en chassant l'air ou l'eau);
- 2/ la seconde se produit par infiltration ou pénétration: le corps moins lourd passe à travers l'autre qui l'a écrasé en se portant vers le bas (cas de la remontée de bulles d'air dans de l'eau).³⁴

Nous reviendrons sur la ressemblance du premier cas avec le phénomène du remplacement réciproque connu de Straton; dans le second cas, on peut se demander si l'expulsion est solidaire de la théorie des micro-vides internes au corps dont fait état le fragment **30A** (Simplicius, *In Aristotelis Physica* IV 9, CAG IX, 693, 10 sqq. Diels). Pour Straton, selon Simplicius, les pores expliquent la réflexion de la lumière mais aussi la pénétration dans un récipient de la lumière, de la chaleur ou d'une autre “puissance corporelle.” C'est un argument supplémentaire apporté à la liste des quatre arguments en faveur du vide mentionnés en *Physique* IV 1, 213b2–27,

³³ Gottschalk (1965) 134.

³⁴ C'est l'expulsion dont parle Aristote en *Physique* IV 7, 214b1: “οἷον ὕδατος συνθλιβομένου τὸν ἐνόντα ἀέρα.” Pour illustrer ce cas, on peut utiliser, comme Bréhier (1931, 1985, 227), l'image suggestive de l'éponge, qui est juste pour autant que l'on précise que c'est le poids du corps plus lourd (et non la main) qui expulse l'eau vers sa surface supérieure.

auxquels Aristote pense avoir répondu sans mobiliser le vide.³⁵ Le témoignage d'Aétius (**50A**) pourrait militer dans le sens d'une expulsion par les pores: il utilise le verbe ἐκπυρηνίζειν, pour désigner une expulsion de type interne; il suggère que l'expulsion du corps plus léger se fait à *travers* le corps plus lourd, et donc peut-être à travers ses pores. Il nous semble que, pour plusieurs raisons, Straton n'a pas eu besoin de cette hypothèse qui aurait pu virtuellement même lui faire difficulté:

- 1/ on notera d'abord, comme on l'a vu, que le verbe employé par Aétius est celui utilisé par Aristote en *Physique* IV 7, 214a33–b1 pour expliquer sans le vide justement le mouvement de compression. On peut donc douter qu'il veuille ainsi conditionner l'expulsion à l'existence de micro-vides.
- 2/ Les exemples utilisés par le fragment **30A** montrent que ce sont des "puissances corporelles" et non des corps qui peuvent traverser un vase par ses pores. Ainsi, outre que l'expulsion peut se faire par la périphérie du corps plus lourd, l'expulsion de l'intérieur du corps est explicable au moyen de la qualité ou du type de puissance passive du corps traversé (la pénétrabilité ou la divisibilité), sans faire intervenir de micro-vides internes.³⁶ Selon l'exemple de Lucrèce, il n'est pas besoin de faire appel au vide pour expliquer la remontée du bois à la surface de l'eau.³⁷
- 3/ Comme on le verra, Aristote mobilise aussi, avec d'autres principes (c'est-à-dire sans utiliser le terme d'expulsion), le même phénomène d'arrangement vertical des éléments sans faire appel à des micro-vides: le feu et l'air se caractérisent par le fait qu'ils "surmontent" l'eau et la terre, et ces derniers par le fait qu'ils "se placent sous" les deux autres.³⁸ Si Straton a innové en expliquant le mouvement ascensionnel du feu par expulsion sous la pression des corps plus lourds et non en référence à la nature du feu, il peut

³⁵ Furley (1985) 151–53.

³⁶ Chez Aristote, voir, par exemple, *DC* IV 6, 313b6–16.

³⁷ Le fragment **29** (*In Aristotelis Physica* IV 7, *CAG* IX, 659, 20 sqq Diels) qui utilise l'exemple des mouvements d'un caillou introduit dans un récipient rempli d'eau pour réfuter l'argument selon lequel le mouvement serait impossible sans vide, semble attester également l'inutilité des pores pour justifier le phénomène d'expulsion. C'est la divisibilité du liquide (et finalement de l'humide) qui explique le mouvement du caillou ou du nageur, non les pores.

³⁸ Les témoignages utilisent la même terminologie que le traité *Du ciel*: ὑφίζανειν (**50B**) et ἐπιπολάζειν (**50A**). Voir par exemple *DC* IV 4, 312a6 et dans la définition du lourd et du léger absolu en IV 4, 311a16–17.

être resté fidèle à Aristote sur les modalités des mouvements par lesquels les éléments se traversent, modalités qui ne font pas appel à des micro-vides chez Aristote.

- 4/ Enfin, si un corps avait besoin de traverser celui qui l'expulse à travers ses pores, pourquoi ne pourrait-il pas aussi coexister, partiellement au moins, dans le même lieu, puisqu'il est de la nature de tout corps pesant de se porter vers le bas? Pour ne pas enfreindre le principe selon lequel deux corps ne peuvent pas occuper le même lieu, il apparaît donc nécessaire que l'expulsion interne ne se produise pas via les pores mais du fait de la divisibilité de l'élément. Nous reviendrons plus bas sur une autre différence qui distingue les atomistes et Straton dans leur usage du mécanisme de l'expulsion.

IV. Le *tekμήrion* dans les fragments **49** et **50B**

Après avoir achevé l'explication linéaire du passage d'Aristote, Simplicius revient sur ce que nous avons appelé la deuxième partie du fragment **50B**, en en faisant un *τεκμήριον* à l'appui de la thèse selon laquelle tous les corps sont pesants et se portent vers le milieu. On sait que, chez Aristote, un *τεκμήριον*, qui n'est pas toujours distingué du *σημείον*,³⁹ a pour fonction de confirmer une théorie. Cela ne signifie pas, chez Aristote au moins, qu'il soit une expérience réalisable ou réalisée; ce peut être une expérience imaginaire. C'est une confirmation ou une vérification extérieure à l'énoncé théorique et qui doit apporter un soutien non argumentatif. Comme le signale Simplicius dans son commentaire au *De caelo* (CAG VII, 264, 6), le *τεκμήριον* n'est pas la cause, αἴτιον. De ce point de vue, la composition du fragment **50B** donne d'abord la cause (tous les corps sont pesants et se portent vers le milieu), puis en propose une confirmation ou une vérification basée sur l'observation sensible.

La question peut se poser de savoir qui a soutenu cette "preuve." L'usage du pluriel (κομίζοντες, 268, 32–33 = **49**, 2) peut être diversement interprété: a-t-il une valeur indéfinie, ou désigne-t-il à la fois Straton et Épicure, ou bien Straton, Épicure et d'autres (Démocrite, Leucippe, les atomistes en général)? Usener fait figurer ce passage dans ses fragments d'Épicure, tandis que Wehrli ne l'inclut pas dans les fragments de Straton. Il pourrait être mis au crédit de Straton auquel Simplicius attribue le recours à des confirmations observationnelles dans le fragment **40** (11, 23, 32). Est-ce

³⁹ Voir *Analytiques premiers* II 27, 70b1 sqq.

vraiment un τεκμήριον cependant, dans la mesure où cette confirmation ne semble pas facilement susceptible d'une mise en œuvre expérimentale? Gottschalk rappelle que le recours au τεκμήριον constitue, selon les commentateurs, un propre de la physique de Straton, mais il ajoute que la difficulté est de savoir lesquels exactement lui sont attribuables, ce qui est vrai dans notre cas.⁴⁰ En se réglant sur les exemples du fragment **40** déjà mentionné, il repère trois caractères de cette notion chez Straton: — elle engage une description précise des circonstances de l'expérience; — elle est aisément vérifiable par n'importe qui; — elle ne conclut à une cause qu'après avoir envisagé toutes les explications alternatives possibles. De ce point de vue, la "confirmation" du fragment **50B** ne remplit pas toutes les conditions: en quoi consiste-t-elle exactement? Si l'on peut penser à quelques observations simples applicables au cas de la terre, de l'eau et de l'air, le cas du feu semble plus difficile. La précision de la description de l'expérience est en tout cas sans aucun rapport avec celle du fragment **40**. En outre, aucune explication alternative n'est ici proposée. Il ne s'agirait donc pas d'un τεκμήριον, mais d'un pseudo-support empirique, c'est-à-dire d'une vérification imaginaire, en faveur de la thèse de la pesanteur de tous les corps. Il n'y aurait donc pas lieu d'attribuer ce passage à Straton. Cependant, on serait tenté, même s'il ne s'agit pas d'un τεκμήριον au sens précis défini par Gottschalk, d'en reconnaître la paternité à Straton, dans la mesure où Aristote lui-même propose une application (réduite, on va le voir) de la même "expérience" dans le *De caelo* IV 5, 312b2–19. Aristote y énonce les principes suivants au sujet de la différence entre pesanteur ou légèreté absolue:

- (1) le feu est léger absolument; il n'a donc pas de pesanteur même dans son propre espace (χώρα);
- (2) la terre est pesante absolument; elle n'a donc pas de légèreté même dans son propre espace;
- (3) l'eau et l'air ont pesanteur et légèreté; ils ont chacun de la pesanteur dans leur espace propre (l'eau dans l'eau et l'air dans l'air); ils n'ont de légèreté que dans l'espace au dessus duquel ils sont (l'eau a légèreté au-dessus de la terre, l'air a légèreté au-dessus de l'eau et de la terre, mais ils n'en ont pas par rapport au feu).

Puis Aristote mentionne les effets hypothétiques des principes énoncés, ce qui est justement interprété par Simplicius dans son commentaire comme un σημεῖον (CAG VII, 723, 6):

⁴⁰ Gottschalk (1965) 139.

- si on “enlève” la terre, l’eau se porte à sa place; si on “enlève” l’eau, l’air se porte à sa place;
- l’eau ne se portera pas à la place de l’air sinon par contrainte; l’air ne se portera pas vers celle du feu, sinon par contrainte; la terre ne se portera pas vers un espace supérieur au sien; le feu ne se portera pas vers un espace inférieur au sien.

Le phénomène en question ne vaut qu’entre l’eau et l’air, pas au sein des quatre éléments ni dans toutes les conditions. Chez Aristote, air et eau ont à la fois pesanteur et légèreté; en vertu des principes énoncés en *De caelo* IV 5, l’air se portera donc à la place de l’eau et l’eau, à la place de la terre, si le corps du dessous “est retiré.” Le même phénomène de remplacement ne se produira pas dans le cas du feu, car il a une légèreté absolue, ni dans celui de la terre, car elle a une pesanteur absolue. Comme on le voit, la seconde partie du fragment **50B** remplit exactement la même fonction de confirmation que la seconde partie de ce texte de *De caelo* IV 5. Il y a bien une confirmation extérieure à l’argumentation, même si aucune condition empirique de l’expérience n’est précisée. Il est donc fortement probable que la confirmation des fragments **49** et **50B** soit attribuable à Straton et ait été conçue en référence au texte du *De caelo*. Straton a simplement étendu le raisonnement d’Aristote à tous les éléments, ce qui lui est rendu possible du fait qu’il leur attribue à tous une pesanteur et qu’il nie que la terre soit lourde absolument (on peut, elle aussi, la “retirer”) et que le feu soit absolument léger (lui aussi se porterait vers le bas). Chez Straton, tous les éléments sont dans la situation qui est celle de l’air et de l’eau chez Aristote: ils ont à la fois pesanteur et légèreté en fonction du milieu dans lequel ils sont; ils seront donc toujours plus ou moins pesants ou légers.

Dans son commentaire, Simplicius réagit comme il le fait ailleurs à l’égard des observations de Straton qui sont de ce point de vue en contradiction avec l’orthodoxie aristotélicienne: il propose une explication alternative qui soit conforme aux “principes du Peripatos,” “κατὰ τὰς Περιπατητικὰς ὑποθέσεις.”⁴¹ Il commence par contester partiellement la validité empirique de cette preuve, puis reproche à ceux qui l’utilisent de ne pas en avoir clairement identifié la cause. On notera en effet d’abord que, dans le fragment **49**, Simplicius ne répète pas littéralement ce qu’il a dit quelques lignes plus

⁴¹ L’expression, éclairante sur le rapport de Simplicius à Straton (Simplicius se veut le défenseur d’un dogme menacé par les observations du péripatéticien Straton), se rencontre juste après le fragment **30A** (*In Aristotelis physicorum libros commentaria* CAG IX, 693, 19 Diels); elle introduit la solution de Simplicius aux phénomènes de la pénétration de la chaleur et de la réflexion de la lumière sur des récipients qui militent pour Straton, selon Simplicius, en faveur des micro-vides.

haut: dans le fragment **50B** qui expose la position de Straton et d'Épicure, il est dit explicitement que si *tous* les corps étaient retirés, le feu se porterait vers le bas; dans la reprise que fait Simplicius à partir de 268, 32 (= **49**), il ne va pas au-delà du cas de l'air, ce qui suggère de sa part une forme de correction de la validité observationnelle du τεκμήριον: le feu ne se porterait pas vers le centre si la terre était retirée. Simplicius affiche ainsi également sa fidélité théorique à Aristote: pour celui-ci, cette preuve ne vaut que dans le cas de l'eau et de l'air, et il est impossible de retirer la terre, tout comme de montrer que le feu se dirige vers le bas.

Une fois faite cette correction, Simplicius propose d'expliquer autrement le phénomène envisagé: si l'air et l'eau se portent vers le bas quand la terre est retirée, ce n'est pas parce que tous les corps sont pesants, mais c'est en vertu du remplacement réciproque des corps (ἀντιπερίστασις). Celui-ci ne dépend pas de la différence entre des corps plus ou moins lourds, mais de celle de l'épais (παχύς) et du fin (λεπτός). On ne peut donc rien en conclure sur le poids des éléments. Cette explication concurrente de Simplicius est cependant mal adaptée à l'observation. Le τεκμήριον attribué à Straton et Épicure en effet demande, comme le passage cité du *De caelo* IV 5, que l'on se représente que chacun des éléments inférieurs est successivement retiré pour faire disparaître l'expulsion qui maintient à sa place l'élément du dessus et il affirme que l'on constatera alors que chaque élément se portera en bas. Il n'est donc nullement question de remplacement réciproque ou d' "interversion":⁴² dans le cas de l'air par exemple, il faut supposer qu'il se portera vers le centre en occupant tout l'espace laissé libre et vide par le départ des autres éléments.⁴³ Le mécanisme décrit par Simplicius supposerait au contraire que le feu se porte vers le bas une fois l'air retiré, et que l'air se porte en remplacement du feu vers le haut. Simplicius donne cette description de l'ἀντιπερίστασις, sans mention des différences qualitatives des corps, dans un passage de son commentaire au chapitre 10 du livre VIII de la *Physique*:

Un mouvement d'une telle nature, dit-il <Aristote>, certains l'appellent "remplacement réciproque." Le remplacement réciproque a lieu quand un corps est poussé par un corps et que se produit un échange des lieux; celui qui a poussé se tient dans le lieu de celui qui a été poussé, et celui qui a été poussé pousse celui qui est à côté, et celui-ci <pousse> celui qui <lui> est contigu, quand plusieurs <corps> sont en jeu, jusqu'à ce que le

⁴² Traduction adoptée par Groisard dans sa traduction des *Météorologiques* (2008).

⁴³ Le τεκμήριον, celui d'Aristote comme celui qui est attribué par Simplicius à Straton et Épicure, fait donc intervenir le principe de l' "horror vacui," mais ce n'est pas la cause du mouvement de chacun des corps vers le bas: c'est son poids. Voir Furley (1985) 157.

dernier aille dans le lieu du premier corps qui a été poussé. (*In Aristotelis Physica commentaria*, 267a12–20, CAG X, 1350, 31–36 Diels)

Le remplacement réciproque ne peut donc pas expliquer le fait que les corps se portent vers le bas, du moins de la façon dont Épicure et Straton prétendent, selon Simplicius, le prouver au moyen du τεκμήριον, puisque dans son cas, il n'y a justement pas remplacement mais expansion d'un corps hors de son espace. On pourrait comprendre que Simplicius veuille expliquer l'expulsion elle-même au moyen du remplacement réciproque, mais cela reviendrait à substituer une nouvelle explication à celle d'Aristote sur le mouvement ascendant du feu. La proposition de Simplicius suppose donc en réalité une situation nouvelle qui est sans rapport avec le τεκμήριον: elle décrit le remplacement réciproque des corps épais et fins (sous l'effet d'une cause qui n'est pas mentionnée) qui aboutit à un état où le fin a été poussé en bas, tandis que l'épais est au dessus de lui. Simplicius ajoute deux conditions caractéristiques du remplacement réciproque (269, 3): c'est un double mouvement dans le plein qui exclut à la fois tout vide (l'espace laissé libre par le départ de l'épais est immédiatement rempli par le fin et réciproquement) et la pénétration d'un corps dans un autre (l'épais prend la place du fin par une sorte de roulement de l'un à la place de l'autre sans passer au travers de lui). Il est vrai que cela permet d'expliquer pourquoi il peut arriver que des corps fins se portent en bas, mais selon une disposition qui n'est plus celle du τεκμήριον. On peut en tout cas douter que Straton ait accepté cette solution, car il apparaît qu'il l'a lui-même utilisée dans un autre contexte, en l'empruntant sans aucun doute à Aristote. Les usages de la notion d'ἀντιπερίστασις sont, chez ce dernier, variés et complexes. On peut au moins rappeler l'un d'eux bien mis en valeur dans la définition du mou au livre IV des *Météorologiques*: le mou est ce qui cède mais non à la manière de l'ἀντιπερίστασις, comme le fait l'eau qui cède à une pression en changeant de place, ἀντιπερίσταται (IV 4, 382a11–14).⁴⁴ On retrouve cet usage au livre I des *Météorologiques* pour désigner l'“intervention” qui a lieu entre le chaud et le froid (12, 348b2–5): les souterrains sont froids en été et chauds lorsqu'il gèle; Aristote propose d'étendre ce mécanisme aux régions supérieures pour expliquer certaines pluies qui ont lieu en été sous l'effet de la compression du froid par la chaleur. Straton prolonge visiblement l'explication de ce type de phénomène dans un texte extrait des *Questions naturelles* de Sénèque⁴⁵ (VI, 13, 2–4 = 53) où celui-ci décrit la “bataille” entre l'air chaud et l'air froid, contraires qui ne peuvent

⁴⁴ Voir Furley (1983b) 145.

⁴⁵ Voir Gottschalk (1965) 149.

coexister et s'expulsent alternativement de leur lieu. On serait surpris dans ces conditions que Straton n'ait pas pensé à utiliser ce concept, s'il l'avait jugé pertinent, dans l'explication du mouvement élémentaire.

V. Poids, nature et contrainte

Essayons de résumer les thèses de Straton sur le poids. Nous le ferons à partir d'un texte du *De caelo* (IV 4, 311b16–29), où Aristote propose la démonstration suivante de l'existence du léger absolu, qui nous semble être même la seule du traité:

Il existe certaines choses qui sont telles <le léger absolu et le lourd absolu> et il n'est pas vrai comme certains le croient que toutes choses possèdent un poids; pour ce qui est d'admettre que le lourd existe et qu'il se porte toujours vers le milieu, ils ne sont pas les seuls à le faire, il y en a d'autres. Mais il y a de la même façon aussi le léger. Nous voyons en effet, comme on l'a dit plus haut, que les <corps> terreux se placent sous tous <les corps> et se portent vers le milieu. Mais évidemment le milieu est déterminé. S'il y a donc quelque chose qui surmonte tous <les corps>, comme le feu manifestement qui même dans l'air lui-même se porte en haut sans que l'air en soit troublé, il est évident qu'il se porte vers l'extrémité. Par conséquent, il n'est pas possible qu'il possède aucun poids, car il se placerait sous un autre <corps>; si c'est le cas, il y aurait un autre <corps>, qui se porte vers l'extrémité, qui surmonte tous <les corps> transportés. Mais il n'y a manifestement rien. Par conséquent le feu n'a aucune pesanteur ni la terre aucune légèreté, s'il est vrai qu'elle se place sous tous <les corps> et que ce qui se place dessous se porte vers le milieu.

La démonstration mêle argumentation logique et recours à l'observation; elle est explicitement conduite à l'attention des démocritéens qui posent, comme Straton, que tous les corps ont un poids. Le principe logique de l'argumentation est que ce qui a un poids se place par définition sous un autre corps.⁴⁶ Puisque le feu surmonte tous les corps, lui attribuer un poids revient à admettre qu'il se place à son tour sous un autre corps. L'autre versant de la démonstration recourt aux phénomènes, en introduisant deux arguments "observationnels" contre la thèse atomiste: (1) le feu se porte vers le haut dans l'air sans troubler l'air qui reste immobile au moment même où le feu la traverse: on observe donc qu'il n'y a pas d'expulsion du feu par l'air; (2) il n'y a manifestement aucun corps au dessus du feu (même

⁴⁶ C'est, selon Simplicius dans son commentaire à ce texte, un "propre" du poids (CAG VII, 713, 18).

pas le cinquième élément): le feu n'est donc de fait en dessous de rien et on ne peut pas dire qu'il a un poids, puisque le "propre" de ce qui a un poids est de se placer sous un autre corps. L'absence de référence au cinquième élément dans cette démonstration s'explique peut-être seulement par le fait qu'Aristote s'adresse à des atomistes qui ne le reconnaissent pas, et que c'est à eux qu'il veut faire admettre la nécessité de poser le feu comme absolument léger, c'est-à-dire dépourvu de poids.

Straton a répondu à cette argumentation sans pour autant adopter les positions atomistes. Il accepte les deux thèses initiales: tous les corps ont un poids et ce qui possède un poids se porte toujours vers le centre. Théophraste, selon lequel l'air lui-même se meut vers le bas parce qu'il est froid (*De Ventis* 22), et non plus humide et chaud, comme pour Aristote, peut avoir influencé Straton sur ce point. Quant au feu, les phénomènes expliqués dans les *Météorologiques*, tels que les étoiles filantes ou la foudre qui se portent vers le bas, ont peut-être convaincu Straton de lui attribuer également un poids. S'il est difficile d'établir le mouvement descendant du feu, puisque nous observons toujours son mouvement dans l'air, l'observation du ciel, qui est de feu pour Straton (42, Aetius II 11, 4, p. 340 Diels), montre différents types de flammes qui se meuvent vers le bas. La remarque d'Aristote selon laquelle rien ne montre que l'air expulse le feu pouvait toucher Straton, si l'expulsion devait se traduire par une pression visible de l'air autour du feu. Sa réponse aurait peut-être été que c'est le caractère ondoyant du mouvement des flammes qui atteste que le feu est bien expulsé vers le haut par l'air.

Le désaccord de Straton porte en outre sur un point de définition: ce qui caractérise le lourd est de se porter vers le bas, non de se placer sous un autre corps, comme le montre bien le τεκμήριον du fragment 50B. Le fait qu'un corps se place sous un autre corps ou en surmonte un autre est un accident ou un effet de la seule propriété du poids qui est de se porter vers le centre. Ainsi défini le poids, rien ne s'oppose à l'attribuer au feu: le feu se porte vers le centre et n'est lui-même sous aucun autre corps, comme le montre effectivement l'observation.

Cela permet en outre d'éviter un problème cosmologique majeur auquel la cosmologie à l'arrière plan de notre texte est exposée. Straton est connu pour avoir supprimé le dualisme cosmologique d'Aristote qui distinguait les quatre éléments et un cinquième élément, l'éther. Comme on l'a noté, cette suppression aurait constitué un risque pour la théorie aristotélicienne du mouvement centrifuge du feu. Lucrèce (I, 1052–1113) critique la représentation d'un cosmos géocentrique où air et feu ont un mouvement centrifuge, en lui opposant notamment le fait que, alors, les

“remparts du monde” pourraient en être rompus (1102–3). Les thèses de Straton permettent de résoudre cette difficulté: si le feu est bien expulsé, il est en même temps pourvu d’un poids qui le comprime vers le bas et lui permet de fermer le monde sur lui-même.⁴⁷

Dire que tous les corps ont un poids ne revient cependant pas à embrasser une conception absolument relative du poids. Sur ce point, la position de Straton semble ambiguë. Il a bien une conception relative du poids au sens que donne Aristote à cette expression dans le *De caelo* (IV 1, 307b7–9): nous avons insisté sur l’usage du comparatif dans les fragments **50A** et **50B**. On pourra donc dire que l’eau est plus pesante que l’air qui est plus lourd que le feu. Mais il est peu probable que Straton ait accepté de dire qu’une grande quantité d’air est plus lourde qu’une petite quantité d’eau (le phénomène d’expulsion en aurait été compliqué). Le poids reste une qualité intrinsèque d’un corps⁴⁸; en ce sens, chacun des corps a les mêmes propriétés que l’eau et l’air chez Aristote: pour Straton, l’eau, l’air et le feu ont à la fois lourdeur et légèreté; ils se comportent de manière différente selon le milieu dans lequel ils sont (ils le surmontent ou vont se placer dessous) mais chacun a une pesanteur propre qui ne dépend pas de sa quantité. Elle est elle-même établie par la place qui est celle de chaque élément au terme du mouvement d’expulsion. Straton maintiendrait donc une théorie cinétique du poids des éléments (le poids d’un élément est celui fixé par l’orientation de son mouvement vers un lieu), sans adopter une conception qualitative qui reviendrait à expliquer les différences de pesanteur en fonction des qualités internes du corps simple.⁴⁹

La théorie aristotélicienne du lieu propre n’est pas incompatible avec cette reconstitution, puisque ce lieu pourrait encore être déterminé par la place de l’élément au terme de l’expulsion. Cependant, si la référence aux observations de Straton dans le fragment **40** (*In Aristotelis Physica* V 6, 230b21–28, CAG X, 916, 4–30 Diels) est utilisée par Simplicius pour expliquer l’accélération du mouvement d’un corps vers son lieu propre, ces observations démontrent en fait seulement l’accélération du mouvement vers son terme, qui n’est pas défini dans le fragment par Straton comme

⁴⁷ Sur l’identification de la doctrine critiquée par Lucrèce, voir Furley (1966) 195 qui penche pour une cosmologie aristotélicienne à quatre éléments et 159; Longrigg (1975) 219, 224–25; Sharples (1998) 91–92.

⁴⁸ Voir O’Brien (1995).

⁴⁹ On a pensé qu’elle dépendait de la densité du corps ou de l’importance des microvides, solution adoptée, sans beaucoup de preuves, par Rodier (1890) 58; Bréhier (1931, 1985) 227; Longrigg (1975) 221; Lautner (2004) 369 n.20.

le lieu propre de l'élément. C'est ce que confirme le fait qu'il utilise deux exemples, la chute d'un filet d'eau et d'une pierre, qui tous les deux, en vertu de leur poids, se portent vers le bas.⁵⁰

Les principes de l'explication du mouvement élémentaire donnée par Straton produisent ainsi sans aucun doute une économie étiologique considérable sur un point complexe de la physique d'Aristote.⁵¹ Il n'y a pas lieu cependant d'inscrire sa démarche dans une critique au long cours d'une théorie de la "puissance du lieu" qu'il faudrait attribuer à Aristote et que Théophraste aurait commencé d'instruire (FHS&G 149).⁵² Comme le dit Cicéron (18), Straton a en tout cas bien mis "les poids et mouvements naturels" au principe de son explication. Sa théorie du poids mobilise une seule cause par laquelle tout corps se porte vers le bas. Mais quelle est cette cause? On peut penser que le mouvement vers le bas suppose une force, sans laquelle l'expulsion ne pourrait avoir lieu. En vertu de cette force, tout corps est aussi comprimé vers le bas ou vers la surface du corps inférieur, ce qui est essentiel dans le cas de l'élément périphérique, le feu. Si nos témoignages nous permettent de comprendre que le mouvement élémentaire centrifuge a pour cause l'expulsion, qui est une cause motrice du mouvement vers le haut de tous les éléments sauf de la terre, on reste cependant en difficulté pour expliquer le mouvement vers le bas lui-même. La seule réponse donnée serait que c'est leur poids, mais nous ne savons pas à quel genre de cause Straton le rattachait ni comment il expliquait que le poids soit cause du fait que les corps se portent vers le bas. Il y a là une difficulté qui n'est pas sans faire penser à celle que rencontre Aristote dans l'exposition de sa propre solution en *Physique* VIII 4,

⁵⁰ Sur l'interprétation de ce passage et le contre-sens éventuel de Simplicius dans l'usage des observations de Straton dans la perspective d'une confirmation de la théorie aristotélicienne du lieu propre, voir Wehrli (1950) 63 et Gottschalk (1965) 95–182.

⁵¹ Hankinson (1998) 197.

⁵² Il n'est pas utile d'ouvrir de nouveau ce dossier au sujet duquel nous renvoyons aux références données note 2 *supra*. L'expression de "puissance du lieu" intervient en *Physique* IV 1, 208b34 dans un contexte évidemment dialectique. Pour Straton, d'après le début du *Corollarium de loco* (27A) et le fr. 26B, le lieu n'est pas une *limite*, mais une *extension* tridimensionnelle constituée par la limite externe du corps enveloppant. Mais comme le signale Simplicius (CAG VII, 269, 15–28), la refonte de la définition du lieu est bien liée d'une certaine façon aux difficultés de la théorie aristotélicienne du lieu naturel et du mouvement élémentaire. Le lieu d'un élément naturel est à la fois une limite, selon la définition du lieu de *Physique* IV, et ce "vers quoi" ou "dans quoi" se dirige cet élément dans un mouvement naturel, soit ou un point (le centre pour la terre), ou une circonférence (la voute céleste ou la surface de la terre), ou l'élément lui-même (la terre pour la terre). Il y a une difficulté à faire du lieu en même temps un milieu et une limite, difficulté que Straton évite en faisant du lieu un intervalle.

255b13–14. L'explication du mouvement de chaque élément vers son lieu propre s'appuie sur une explication de la manière dont chaque élément se change en un autre. Ce changement se produit au moyen des mêmes causes que tout type de changement: un mobile (ce qui est en puissance lourd ou léger) se meut sous l'effet d'un moteur (ce qui alourdit ou ce qui allège le mobile) vers un terme qui constitue pour ce mobile sa forme, sa fin ou son entéléchie, quand aucun obstacle ne l'empêche, ce qui retire l'obstacle pouvant le cas échéant être tenu pour un moteur par accident. Le feu va donc vers le haut de la même manière que le mouvement du guérissable en tant que guérissable s'achève dans la santé. Être dans son lieu propre est de ce point de vue pour chaque élément accéder à sa forme, à sa fin et à son entéléchie.⁵³ Le mouvement de chaque élément vers son lieu propre est donc un type de déplacement dépourvu d'autre cause motrice que celle qui change un élément en un autre; pour le reste, il est de la nature de chaque élément de se porter vers son lieu propre: "c'est l'essence du léger et du lourd, définie l'une par le haut, l'autre par le bas" (255b14–15).⁵⁴ Du côté de Straton, l'expulsion constitue une cause motrice du mouvement dérivé de chaque élément vers le haut, mais non de son mouvement primaire vers le bas. Selon les témoignages de Simplicius en tout cas, ce mouvement n'a pas d'autre cause que la nature, mais comment le comprendre?

Nos témoignages sur Straton montrent qu'il a exclu de l'explication du mouvement élémentaire les principes des êtres composés, forme et matière, puissance et acte. Notre jugement sur ce point est sans doute en partie faussé par l'absence de documentation sur la question de la génération mutuelle des éléments. Comment Straton produisait-il les éléments à partir des deux qualités qu'il reconnaissait comme des principes, le chaud et le froid (**46** et **53**)? Ces éléments s'engendraient-ils mutuellement et comment? Comment évitait-il l'immobilisation des strates élémentaires, séparées les unes des autres, à laquelle son explication semble exposée, tout comme celle visée par Aristote dans un passage du traité *De la génération et la corruption*?⁵⁵ L'objet de nos témoignages est finalement réduit; on ne

⁵³ Dans cette explication, le feu a un statut ontologiquement différent des autres éléments: à la limite du monde et l'enveloppant, en dessous du corps premier, il est de l'ordre de la limite et donc aussi de la forme. Le feu est plus forme pour chaque élément que les autres dont il se "nourrit," alors que chaque élément dans son lieu est la forme ou la fin par rapport aux corps élémentaires homogènes qui s'y dirigent. Voir *De la génération et la corruption* II 8, 335a14–21 et Rashed (2005) LXXV–LXXVI.

⁵⁴ Sur les difficultés de l'explication aristotélécienne du mouvement élémentaire en *Physique* VIII voir Cohen (1994).

⁵⁵ II 10, 337a8–10.

peut sans doute pas y réduire sa théorie du mouvement des éléments, s'il en avait bien une. Au moins ces fragments laissent apparaître un usage particulier du concept de nature.

Revenons sur ce point, qui est l'un des principaux des thèses sur le poids qui lui sont attribuées: la différence entre mouvement contraint et naturel. On l'a vu, nos deux sources, Thémistius et Simplicius, sont à ce sujet en désaccord. Thémistius fait de la contrainte la cause de tout type de mouvement élémentaire; Simplicius voit dans le mouvement vers le bas le mouvement élémentaire naturel, tandis que l'expulsion est mise du côté des mouvements contraints ou par force. Il nous semble que ce désaccord est le signe d'une difficulté ou d'une originalité de la conception que se fait Straton du mouvement d'expulsion et du mouvement naturel.

Si l'on admet que le mouvement vers le bas est naturel pour tout élément, il y aura en fait deux mouvements contraints différents: celui de l'expulsion et celui par lequel un élément sera disposé par une force extérieure à une place qui ne lui convient ni selon son mouvement naturel (en bas), ni selon l'expulsion. Cette place (le feu entre l'eau et l'air par exemple) serait sans rapport avec le caractère plus ou moins lourd de cet élément au terme de l'expulsion et aurait été acquise par une cause extérieure. Si l'on se demande quel est de l'expulsion ou de ce mouvement le plus contraint, on s'accordera pour penser que c'est ce dernier mouvement. L'expulsion, quant à elle, emprunte des traits au mouvement naturel et au mouvement contraint: elle n'est pas un mouvement naturel *stricto sensu* si l'on considère, selon la définition de *Physique* II 1, qu'est naturel ce dont le principe de mouvement est dans le corps mû en soi et immédiatement (192b21–23). Selon cette définition, le seul mouvement naturel est celui qui ne se justifie que par la nature ou la forme du corps. Elle n'est pas non plus un mouvement naturel du fait que, lorsqu'elle cesse, l'élément retrouve son lieu naturel, le milieu. Elle n'est pas un mouvement contraint cependant pour autant que ce n'est pas une force extérieure, tel qu'un levier, qui est cause de l'expulsion du corps moins lourd mais la différence entre le poids du corps plus lourd et son propre son poids. L'expulsion est de ce point de vue envisageable comme l'effet secondaire du mouvement naturel par lequel tout corps se porte vers le bas; elle n'est pas simplement un choc mais un mouvement second produit par un mouvement naturel initial. On peut résoudre peut-être à partir de là l'antinomie des interprétations de Thémistius et Simplicius: Thémistius a raison de penser que tous les mouvements élémentaires sont contraints pour Straton, dans la mesure où effectivement Straton a supprimé la différence entre "lourd absolu" et "léger absolu." De

ce point de vue, si la terre se porte vers le bas, ce n'est pas parce que la terre est absolument lourde, mais parce qu'elle est plus lourde que les autres éléments. Peut-être devrait-on ajouter que, pour Straton, si le pesant se porte vers le bas selon la nature, c'est parce qu'on a toujours vu qu'il se porte vers le bas. La régularité est pour Aristote un élément de la nature, mais elle serait insuffisante à définir pour lui le mouvement naturel, qui doit être défini à partir de l'essence du corps mù. Or, pour Straton, le pesant n'actualise aucune forme et ne rencontre aucune fin en se portant vers le bas. Du point de vue d'un concept statistique de la nature, qui est finalement peut-être celui qu'utilise Straton, le mouvement vers le bas tel qu'il le conçoit est bien naturel; du point de vue où, pour Aristote, la nature est certes matière mais aussi et surtout forme, le mouvement vers le bas tel que Straton le conçoit serait, pour Aristote, contraint, car Straton ne fait pas dépendre l'orientation du mouvement de la forme du corps mù. Il ne serait pas en ce sens strict un mouvement naturel, et serait donc contraint, tout comme le serait évidemment dans cette perspective le mouvement d'expulsion. Quant à Simplicius, il a raison aussi de distinguer mouvement vers le bas et expulsion, puisque l'expulsion, on l'a vu, ne procède pas immédiatement du poids de l'élément, mais de manière seconde. L'expulsion se situe donc à mi-chemin entre mouvement naturel et contraint. Quitte à aller contre le témoignage de Simplicius qui en fait un mouvement contraint (**50B**), l'expulsion pourrait revendiquer le titre de mouvement naturel, pour les mêmes raisons selon lesquelles le mouvement vers le bas est naturel: elle est une cause qui ne relève pas de la régularité de l'exceptionnel, celle du hasard ou de la fortune, mais bien de celle qui est propre à la nature, qui est le plus souvent ou toujours.⁵⁶ Elle est aussi cause d'un ordre stable, trait propre de la nature, qui se trouve être l'ordre concentrique des éléments tel qu'il est défendu par Aristote.⁵⁷ Le résultat de l'expulsion, quelle que soit son origine mécanique, est bien un ordre constant et il est à ce titre conforme à la nature. De ce point de vue Straton a bien mis toute force dans la nature (Cic., *De natura deorum*, I 13, 35 = **19A**), en étant attentif par l'observation à ce que la nature produit d'elle-même en fait d'ordre et de régularité, sans faire appel aux principes de la substance.

⁵⁶ *Physique* II 8, 198b34–36; *Rhétorique* I 10, 1369a35–b5.

⁵⁷ *Physique* VIII 1, 252a12–17; *Du ciel* III 2, 301a4–9; *De la Génération et la corruption* II 10, 336b12.

VI. Conclusion

Dans son article “*The Cosmological Crisis in Classical Antiquity*,”⁵⁸ David Furley énumère un certain nombre de thèses qui distinguent cosmologie atomiste et aristotélicienne au sens large, enveloppant non seulement Aristote, mais aussi Platon et les Stoïciens. Pour les “aristotéliciens” : l’existence d’un plan ou du moins d’un ordre du cosmos, l’explication téléologique, le caractère fini du cosmos, son éternité, son unicité, l’absence de vide dans le cosmos, sa continuité, la dynamique centripète, la sphéricité de la terre, l’immatérialité de l’âme, l’éternité des espèces; chez les atomistes : l’accident, l’explication à partir de la matière en mouvement, l’univers infini, un cosmos limité dans le temps, la pluralité des mondes, la matière et le vide, les atomes, une dynamique linéaire, la terre plate, l’âme matérielle, l’évolution.⁵⁹ Straton a-t-il franchi la ligne et recomposé autrement la division? Le rôle que, selon Plutarque (*Adv. Coloten* XIV 1115 b = 20), il accorde, contre Platon et Aristote, au hasard et à la chance dans l’explication des phénomènes naturels, contre le recours à la cause formalo-finale, pourrait attester qu’il a profondément changé l’étiologie aristotélicienne. Comment comprendre aussi sa position sans en faire celle d’un éclectique, ainsi qu’y encouragent notamment ses thèses sur le poids dont la parenté avec celles des atomistes n’est pas contestable?⁶⁰ Il y a bien, si l’on veut, éclectisme chez Straton au sens où il exploite certaines solutions des atomistes, connues au sein du Lycée, mais il le fait dans un cadre cosmologique qui reste aristotélicien. Sur la question du poids, il a confirmé la stratification aristotélicienne des éléments par un moyen économique dont il ne pouvait pas ignorer qu’il était d’origine atomiste, mais en le détournant de la fonction initiale qu’il a chez eux. L’expulsion des corps plus légers par les plus lourds est un phénomène purement mécanique qui permet la production d’un ordre sans l’intervention d’aucune autre cause que motrice, en particulier sans l’intervention d’une fin, qu’elle soit intentionnelle ou immanente à la nature. Pour les atomistes, l’expulsion joue un rôle dans une perspective cosmogonique, expliquer la genèse d’un ordre cosmique sans téléologie. Pour Straton, dont rien ne dit qu’il ait remis en cause la doctrine de l’éternité du cosmos défendue par Théophraste, l’expulsion explique uniquement la *conservation* d’un ordre éternel. C’est une expulsion conservatrice, non

⁵⁸ (1986) 223–35.

⁵⁹ Nous sélectionnons ici les rubriques; Furley détaille certaines pour faire droit aux positions stoïciennes ou platoniciennes.

⁶⁰ C’est le jugement de Wehrli (1950) 58.

productrice. De ce point de vue, le recours à l'expulsion constitue une innovation économique mais qui ne suppose pas en elle-même de révolution cosmologique. Elle est une solution astucieuse, nourrie de la familiarité de Straton avec l'observation des phénomènes, et rendue nécessaire par une double correction déjà amorcée par Théophraste de la théorie aristotélicienne du ciel: (1) il n'y a pas de cinquième élément; il est donc impossible de continuer d'attribuer au feu un mouvement centrifuge; (2) l'observation montre (ce qu'Aristote avait en partie reconnu) que l'air et le feu se portent vers le bas. Si tous les éléments ont un poids et un mouvement centripète, il fallait expliquer l'étagement des éléments, fonction précise que remplit l'expulsion.⁶¹

La position attribuée à Straton par Plutarque au sujet du rôle du hasard peut, nous semble-t-il, être également comprise de ce point de vue: si les atomistes reconnaissent un rôle créateur à la causalité du hasard dans un univers et sur une durée de temps infinis, faire jouer au hasard le rôle de principe dans le cadre d'une cosmologie finitiste et éternitaire revient à considérer que la nature n'est pas une fin mais seulement un ordre de régularité et que cet ordre n'a pas d'autre justification que lui-même. Dire, comme il l'a fait selon Plutarque, que l'ordre naturel suit de ce qui est conforme à la fortune, ce n'est pas faire dériver l'ordre actuel d'un désordre initial progressivement stabilisé, ce n'est pas non plus dire que l'ordre naturel est lui-même soumis au hasard, mais c'est dire que l'ordre naturel n'a ni plus ni moins de sens que le hasard: il n'est pas une fin, mais un effet régulier sans commencement ni terme. Le catalogue transmis par Diogène nous montre que le physicien Straton a été davantage attiré par la physique de l'inerte que du vivant; sa physique, non finaliste, non vitaliste, n'est pas orientée vers la biologie, comme l'est largement celle d'Aristote, mais ancrée dans une dynamique purement mécaniste, comme l'ont montré ses thèses sur le poids.

⁶¹ Nous rejoignons ici pour le cas de Straton les conclusions de Marwan Rashed (2009) qui explique pourquoi, selon lui, Xénarque de Séleucie a été conduit à faire l'économie du cinquième élément: "[. . .] à bien la considérer, l'entreprise de Xénarque s'apparente à une unification physique de la cosmologie aristotélicienne. On exclut toutes les entités dont l'existence n'est pas vérifiée expérimentalement et l'on cherche à réduire le nombre de principes au plus strict nécessaire" (19).

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Straton et la question du temps comme nombre du mouvement

Annick Jaulin

Pour les fragments sur la question du temps et du mouvement (Sharples **31–41**),¹ Simplicius reste notre source principale d'information. De fait, presque tous les extraits viennent du commentaire de Simplicius à la *Physique* d'Aristote et du supplément à ce commentaire, désigné sous le titre de *Corollarium de tempore*.² Sur les douze fragments édités (il y a en effet deux fragments **38**, désignés par **A** et **B**), deux, les **35** et **36**, viennent de Sextus; un, le **33**, est extrait de Stobée et un autre, le **37**, rapporte un témoignage de Damascius. De plus ce nombre (8/12) est sans rapport avec l'étendue: sur les seize pages de fragments relatifs au temps et au mouvement, les fragments extraits de Simplicius en constituent douze. Le Straton que nous possédons est donc le Straton de Simplicius et le Straton de Simplicius, selon le jugement de Simplicius lui-même, peut être reconduit à Aristote.

Cette rapide recension manifeste la disproportion entre les occurrences textuelles en notre possession, le jugement du principal agent de leur transmission et les bouleversements attribués à Straton dans l'histoire

¹ Ces fragments correspondent à Wehrli, 1967/69, 70–83, avec l'ajout, sous **34**, d'un passage extrait du commentaire de Simplicius aux *Catégories*.

² *Commentaria in Aristotelem Graeca*, 9 (1882) et 10 (1895).

des doctrines du Péripatos par certains contemporains. De ce point de vue, on ne peut que souscrire à l'assertion initiale de L. Repici dans son étude sur Straton: "Les présentations de la physique de Straton dans l'historiographie moderne sont en quelque sorte le miroir des différentes images d'Aristote."³ Il est clair que la statue d'un Straton savant positif, voire "positiviste," proposée par deux essais convergents⁴ de la fin du XIX^e, n'a de sens que par opposition à un certain Aristote; l'une et l'autre assertion sont le fait d'une reconstruction inventive et hasardeuse. Que Straton ait récusé la théorie aristotélécienne de la finalité et celle de la forme qui lui serait liée⁵ n'a rien d'une évidence: les textes ne disent rien de tel. En outre, la représentation que l'on peut se faire de la finalité chez Aristote s'est complexifiée. On a pu soutenir, comme l'a fait W. Wieland, que le "*telos* est un concept de la réflexion" et affirmer que, chez Aristote, la "téléologie n'a pas une importance plus grande que dans la philosophie de Kant."⁶ Si ce jugement peut paraître, à son tour, contestable, il aura cependant montré l'aspect relatif du premier.

Il a donc été soutenu que Straton aurait rompu avec la tradition finaliste du Lycée et ouvert la voie à une véritable physique scientifique. Dans cette même ligne d'interprétation, S. Sambursky,⁷ par exemple, voit en Straton le précurseur des conceptions newtoniennes d'un temps et d'un espace absolus. R. Sorabji⁸ juge, avec raison, ce rapprochement peu convaincant. La diversité des jugements sur les nouveautés stratoniciennes pourrait laisser naître le soupçon que chacun juge Straton à son aune, en pratiquant une méthode projective à laquelle il faudrait se soustraire.

Pour le faire, il est nécessaire de revenir aux fragments collectés dans ce volume afin de les situer dans leur contexte et de tenter de réduire l'arbitraire de l'interprétation. L'usage des textes de Sextus n'est pas celui de Simplicius. Cela s'entend selon le double sens du génitif: le projet philosophique des auteurs est différent, ils n'utilisent donc pas les textes selon la

³ Repici, 1988, vii: "Le presentazioni della fisica di Stratone nella storiografia moderna sono in qualche modo lo specchio di immagini diverse di Aristotele."

⁴ Diels, 1893, repris 1969, 239–65 et Rodier, 1890, notamment 53–133. Pour la qualification de "positiviste," voir 115.

⁵ "Straton renonçant à faire appel à la finalité pour expliquer la nature [...] devait la [la théorie de la forme] modifier. Aussi soutenait-il, nous dit Simplicius, que la forme change et se meut en même temps que les êtres en qui elle réside" (Rodier, 1890, 62). On verra que Simplicius ne dit pas cela. Mais Wehrli, 1967/69, 63 suit Rodier sur ce point, voir son commentaire au frgt qu'il édite sous le n° 72.

⁶ Wieland, 1975, 159.

⁷ Sambursky, 1965, 310.

⁸ Sorabji, 1983, 82.

même perspective; le lecteur ne peut séparer les fragments recueillis des raisons qui ont conduit à les recueillir; on travaillera, notamment dans le cas de Simplicius et de Sextus, sur des contextes plus larges.

Les fragments extraits de Stobée, Sextus et Damascius

Le fragment **33**, extrait d'une liste de diverses conceptions sur le temps énumérées par Stobée, note en une ligne que, selon Straton, le temps est "la quantité⁹ dans le mouvement et le repos." La brièveté du passage ne permet pas de décider si Straton reprend seulement l'affirmation aristotélicienne de *Physique* IV,¹⁰ en substituant "quantité/*poson*" à "mesure/*metron*" et quel pourrait être le sens éventuel de cette substitution, ou si la substitution, assortie du fait que la quantité est décrite comme quantité "dans le mouvement" et non "du mouvement,"¹¹ implique une thèse nouvelle par rapport à la thèse aristotélicienne. Dans la mesure où ces questions et les différences de sens qu'elles impliquent n'auraient pas même pu être formulées en dehors des témoignages et des explicitations donnés par Simplicius, elles seront traitées lors de l'examen des fragments de cet auteur.

Le fragment **37** donné par Damascius, également très bref, rapporte que, pour Straton, "le temps est composé de parties qui ne demeurent pas." Mais le contexte, le commentaire du *Parménide*, montre que le problème réside dans le fait de savoir si le temps est composé de "parties sans parties" ou "d'intervalles séparés." Les "parties qui ne demeurent pas" de Straton doivent se comprendre comme des parties "séparées" dont chacune est continue. Il n'y a pas, sur ce point, d'opposition entre Straton et Aristote, cité quelques lignes plus bas comme partageant le même point de vue.

Le fragment **35**, extrait de Sextus, rapporte que Straton s'est opposé à la définition aristotélicienne du temps comme "nombre du premier et du postérieur dans le mouvement," en définissant le temps comme "mesure (*metron*) de tout mouvement et repos." L'opposition viendrait-elle du refus stratonicien de la définition aristotélicienne du temps comme "nombre du mouvement selon l'antérieur et le postérieur"?¹² En effet, la formule ne mentionne ni antérieur ni postérieur et utilise "mesure" plutôt que "nombre." Cela implique-t-il qu'il faudrait choisir entre "nombre" et "mesure"

⁹ Ou le "combien" (*poson*).

¹⁰ 221b7-8: "Mais puisque le temps est mesure (*metron*) du mouvement, il sera aussi mesure du repos."

¹¹ On trouve une formulation semblable dans le fragment **31**, donné par Simplicius, à propos des actions. Voir plus bas les remarques à ce propos.

du mouvement dans la définition du temps? La conséquence théorique de ce choix, si tant est qu'il s'agisse d'un choix, ne peut être cherchée ni trouvée dans le contexte de la citation de Sextus¹³ qui n'oppose le nombre et la mesure que pour mieux montrer que l'on ne peut décider si le temps est la "mesure" du mouvement et du repos ou, à l'inverse le mouvement et le repos la "mesure" du temps, mais que l'on aurait dû plutôt faire du mouvement la mesure du temps, car la bonne méthode est de procéder du plus facile vers le plus difficile, alors qu'on a fait le contraire.¹⁴ Ce qui veut dire que les deux définitions, "nombre" et "mesure" sont également suspendues. La seule conclusion que l'on puisse poser est que Straton n'a pas inversé les rapports entre le mouvement et le temps par rapport à ce qu'ils étaient chez Aristote.

Il n'y a pas lieu de construire à partir de là une opposition dogmatique entre Aristote et Straton. De fait, Aristote définira, lui aussi, le temps comme "mesure" du mouvement¹⁵ et Plotin qui développe un argument voisin¹⁶ de celui prêté à Straton (argument sur lequel nous reviendrons) ne cite pas Straton sur ce point. En outre, on le sait, le recueil des opinions contraires par Sextus vise à produire la suspension du jugement devant la force égale des arguments opposés,¹⁷ on ne peut donc utiliser, sans risque, à l'inverse de leurs intentions déclarées, les doxographies sceptiques. La "force égale des arguments opposés" permet certes de dire qu'il y a une opposition entre les thèses de Straton et d'Aristote sans cependant que la nature de cette opposition (nominale ou réelle) puisse être précisée, mais elle implique également que ces thèses ont la même force, sans que l'une puisse être considérée comme supérieure à l'autre, sous peine de rompre l'isosthénie. Il est donc difficile d'interpréter ce témoignage de Sextus comme la description d'un progrès des idées en physique. Il est même tout à fait impossible de considérer l'une des deux définitions comme plus claire ou plus positive que l'autre, puisque l'une et l'autre est donnée comme également obscure, par opposition à une définition, plus facile à comprendre, du temps par le mouvement.

Le fragment **36** illustre le risque d'une lecture dogmatique de ce qui est rapporté par Sextus. Le fragment est extrait du traité *Contre les physiciens* qui vise à susciter des apories sur tous les énoncés dogmatiques proférés dans le domaine physique. Les domaines de ces énoncés sont parcourus

¹² *Physique*, IV, 219b2.

¹³ Il s'agit de l'*Adversus physicos*, 10, 177.

¹⁴ *Adv. Phys.*, 10, 179.4–180.5.

¹⁵ *Physique*, IV, 12, 220b32.

¹⁶ Traité 45 (III, 7), 9, 15–21.

¹⁷ *Adv. Phys.*, 10, 168, 4–6.

successivement de manière systématique en deux livres. Le fragment appartient, dans le deuxième livre, à la subdivision nommée “si le mouvement est”¹⁸ où il s’agit, comme précédemment, de susciter la suspension du jugement (l’*épochè*). La question ne concerne donc pas la nature du temps qui fera l’objet de la section suivante,¹⁹ mais l’existence ou la non-existence du mouvement. Sur cette question, on sait quelle est la position de Sextus, décrite dans les *Esquisses pyrrhoniennes*: “Je pense qu’il s’est présenté trois positions dominantes concernant le mouvement. En effet la vie quotidienne et certains philosophes supposent qu’il y a du mouvement, Parménide, Mélissos et quelques autres qu’il n’y en a pas, quant aux sceptiques, ils ont dit: pas plus le mouvement n’est plutôt qu’il n’est pas.”²⁰ Il s’agit bien de justifier cette position sceptique par la mise en difficulté des thèses qui affirment ou nient l’existence du mouvement. Cette mise en difficulté s’effectue selon un parcours dialectique qui surmonte une thèse, la thèse opposée et la thèse intermédiaire:²¹ si tout est partageable à l’infini, il n’y a pas de mouvement; si le temps, le corps et le lieu sont sans parties, tout est de vitesse égale, ce qui est absurde;²² reste donc à envisager le fait que certaines choses soient divisibles en parties et d’autres non. La référence à “ceux de l’entourage de Straton”²³ est introduite pour illustrer cette troisième figure où le temps serait rapporté à un indivisible (*eis ameres*), tandis que le corps et le lieu seraient divisibles à l’infini; cette thèse conduit également à des conséquences absurdes.

Peut-on inférer de ce témoignage de Sextus que Straton concevrait le temps comme constitué de parties indivisibles? Et surtout de quoi s’agit-il avec ces parties indivisibles? Wehrli²⁴ n’hésite pas à faire converger le témoignage de Sextus avec celui de Simplicius au fragment **31** (ligne 25), interprété à contresens, pour conclure à une interprétation différente du *nun* entre Straton et Aristote, ce qui permettrait à Straton de composer le temps de *nun*. Le rapprochement des fragments **31** et **36** est dû à une interprétation fautive²⁵ du témoignage de Simplicius qui dit, en réalité, le contraire de celui de Sextus: selon le témoignage de Simplicius, le temps

¹⁸ *Adv. Phys.*, 10, 36, 6.

¹⁹ *Adv. Phys.*, 10, 168, 7.

²⁰ *Esquisses Pyrrhoniennes*, III, 10, 65. Traduction Pellegrin, 1997.

²¹ *Adv. Phys.*, 10, 121, 1–122, 6.

²² *Adv. Phys.*, 10, 154, 1–8.

²³ *Adv. Phys.*, 10, 155, 3. Le texte dit “*hoi peri ton Stratona*.”

²⁴ Wehrli, 1967/69, commentaire p. 64–65.

²⁵ Le contresens est déjà signalé par Sorabji, 1983: “Here Strato is not *endorsing* the idea that time is composed of nows, whether the nows be atomics or instantaneous. Rather he is treating that as an absurd consequence of the view he is opposing. This only confirms that, on his own view, time is continuous” (378).

n'est pas composé d'instants ou d'indivisibles. Il reste donc le seul témoignage de Sextus pour fonder la thèse d'un temps composé de "parties indivisibles." Ce qui semble exclu, de quelque manière que l'on procède, est de prêter à Straton une conception d'un temps composé d'atomes indivisibles.²⁶ R. Sorabji, plus sobrement, crédite Straton d'une originalité indéniable, par rapport à Aristote, en ce qu'il aurait désolidarisé les unités de grandeur et de mouvement de celles du temps.²⁷

Or, cette conclusion n'est pas non plus nécessaire. Si l'on revient au contexte de l'argumentation du fragment **36**, l'idée de parties du temps qui "aboutissent (*katalègein*) à un indivisible" sert clairement à poser le modèle d'un mouvement qui "parcourt d'un coup un intervalle divisible"²⁸ et évite ainsi l'aporie de la divisibilité infinie des grandeurs, par laquelle on récuse l'existence du mouvement, si toutefois on le faisait commencer par un premier intervalle qui serait infiniment divisible (*kata to proteron proteron*). La question est donc celle du mouvement et de son arrêt; le texte évoque ensuite différents problèmes concernant un "arrêt ou une fixité—*stasis*."²⁹ Le but visé par l'argumentation de Sextus est de mettre en difficulté cette présentation du temps et de l'aspect indivisible qu'elle comporte afin de revenir à la négation du mouvement.

Le contexte fait manifestement référence à la réfutation des apories de Zénon et pourrait être rapproché de l'argumentation aristotélicienne du livre VI de la *Physique* sur ce même thème, où Aristote fait aussi allusion à un temps fini, notamment à un "temps comme fini d'un des deux côtés"³⁰ ou au fait que "l'une des deux limites" puisse être donnée. Plus généralement, l'analyse du *nun*, quelques lignes plus loin,³¹ pose comme nécessaire que "l'extrême des deux temps, à savoir le "maintenant," soit le même." De fait, le fragment **36** n'implique nullement une division du temps en "parties indivisibles," mais le fait qu'il y ait un terme indivisible comme limite du temps.³² Cette thèse est aristotélicienne et Sextus pourrait ainsi évoquer les positions du Péripatos dans la réfutation des paradoxes zénoniens. On remarquera d'ailleurs qu'il ne fait pas allusion à Straton seul, mais évoque, par le pluriel, la position d'une école. De fait, le commentaire

²⁶ Voir la critique faite par Sorabji, 1983, 53–54, des conceptions de Sambursky.

²⁷ Sorabji, 1983, 367. "I shall argue that Strato was the first person to challenge Aristotle's claim that atoms of one kind imply atoms of another."

²⁸ La traduction est celle de Pellegrin, 1997.

²⁹ *Adv. Math.*, 10, 156, 2.

³⁰ Aristote, *Physique*, VI, 233b11–14.

³¹ Aristote, *Physique*, VI, 234a5–6.

³² *Ameres* est un singulier et *katalegein* signifie "finir, cesser," voire "se terminer par."

de Simplicius à la ligne 186a13 de la *Physique* d'Aristote,³³ met bien en évidence l'importance de ce "changement tout d'un bloc (*athroas gignomenès metabolès*)" dans la critique aristotélicienne de Mélissos, illustré par ce changement qu'est l'altération, lequel peut avoir lieu d'un seul coup comme par exemple la congélation.³⁴ La note de P. Pellegrin *ad locum*: "Aristote semble donc reprocher à Mélissos de n'avoir pas séparé origine temporelle et origine spatiale"³⁵ montre que l'originalité prêtée à Straton par R. Sorabji est, en réalité, la simple orthodoxie de l'école depuis Aristote. Dans le cas de l'altération, on peut désolidariser le temps de l'étendue spatiale.

Les fragments extraits de Simplicius

L'analyse du fragment **36** de Sextus conduit donc à ne pas considérer comme une innovation la dissociation entre grandeur et mouvement dont témoignent les fragments **38A** et **38B** extraits de Simplicius. L. Repici a déjà montré que les fragments **39** et **41** ne proposaient rien qui soit étranger aux analyses aristotéliciennes.³⁶ On aura donc tendance, au moment d'aborder les témoignages de Simplicius sur la question du temps, à privilégier le point de vue de l'auteur lui-même qui ne semble pas accorder aux innovations stratoniciennes une portée d'envergure, puisqu'il conclut ses *Corollaires sur le temps*³⁷ par l'évocation des difficultés soulevées par Straton, qu'il ne sépare pas des difficultés aristotéliciennes. De fait, on hésitera à suivre Wehrli dans son commentaire du fragment **40**, lorsqu'il considère que Simplicius "donne une mauvaise interprétation de l'observation de Straton,"³⁸ en la rattachant à la théorie aristotélicienne du "lieu propre." En réalité, la présentation faite par Simplicius est plus complexe et ne se réduit pas à la reprise de la théorie du lieu propre, car, après avoir posé qu'il est un "axiome que tous professent," à savoir que "les corps mus d'un mouvement naturel sont transportés plus rapidement vers leurs lieux propres,"³⁹ il distingue entre plusieurs versions de la mise en œuvre de l'axiome. Sans entrer dans le détail de l'argumentation sur un point qui ne nous concerne

³³ Simplicii in *Aristotelis Physicorum Libros Quatuor Priores Commentaria*, CAG, vol. 9 (Berlin, 1882), 105, 28–107, 11.

³⁴ Aristote, *Physique*, VIII, 3, 253b25.

³⁵ Pellegrin, 2000, 82 n. 2.

³⁶ Pour l'analyse du fragment Sharples **39** (Wehrli 72), voir 38–39; pour celle du fragment Sharples **41** (Wehrli 74), voir 33–38.

³⁷ Simplicii in *Aristotelis Physicorum Libros* vol. 9, 800, 18–19. Traduction anglaise par Urmson, 1992.

³⁸ Wehrli, 1967/69, p. 63 commentaire au fragment qu'il édite sous le n° 73.

³⁹ Simplicii in *Aristotelis Physicorum Libros*, CAG, vol. 10, p. 916, 4–21.

pas au premier chef, on notera seulement que les *Météorologiques* donnent plusieurs exemples de corps qui ne résident pas, en raison de leur poids, dans leur lieu naturel. L'exemple le plus célèbre est fourni par la discussion relative au lieu de l'eau et à celui de la mer.⁴⁰ En conséquence, il serait judicieux de privilégier l'hypothèse d'un aristotélisme plus complexe qu'on ne l'a pensé plutôt que d'invoquer quelque erreur d'interprétation de Simplicius. Car dans cet aristotélisme moins sommaire, Straton s'inscrit sans rupture.

Les fragments relatifs au temps sont tous extraits du *Corollarium de tempore*, où ils se présentent concentrés sur trois pages (788–90). À partir de la page 785, Simplicius entreprend d'examiner les opinions de ses prédécesseurs sur le temps, après avoir caractérisé comme "sophistique" certain argument de Damascius (782, 21), critique à l'égard des thèses aristotéliennes. Tel est le contexte de citation des interventions de Straton sur la question. On verra que Simplicius considère qu'elles ont peu d'incidence. Ce que confirme la fin du texte qui, après avoir évoqué les apories sur l'existence du temps, soulevées par Straton et par Aristote, indique où se trouvent les instruments de leur solution, à savoir dans les analyses du livre VI de la *Physique* d'Aristote (800, 21–25). Comme souvent, l'énoncé d'apories n'implique pas l'ignorance de la solution

La route "plus nouvelle" tracée par Straton (789, 3)⁴¹ trouve son origine dans le refus d'accepter que "le temps soit nombre du mouvement" (10–11). La raison de ce refus, comme l'expose la suite des arguments, tient à la contradiction entre la nature de "quantité discontinue (*diôrismenon poson*)" du nombre, alors que "le mouvement et le temps sont continus et que le continu n'est pas nombrable" (11–12). Si cette première assertion est contestée, parce que l'on peut distinguer dans le mouvement des parties distinctes dont l'une serait antérieure et l'autre postérieure, et que, du moins selon la distinction de la partie antérieure et de la partie postérieure, on peut donner un nombre du mouvement, alors il y aura aussi un nombre des autres quantités continues, à savoir de la longueur et du temps de sorte qu'il y aura un temps du temps, autrement dit un nombre du nombre. Un second argument (17–21) tient à la contradiction entre la nature du nombre et celle du temps. Le nombre n'est pas soumis à la génération et à la corruption, tandis que ce qui est nommé périt, car le temps "vient à être et périt de manière continue": toutes les parties du nombre sont en même temps (la triade n'existe pas, si n'existent pas trois unités en même temps), alors que c'est impossible pour les parties du temps (qui sont dès

⁴⁰ Aristote, *Météorologiques*, II, 2, 355a32–b6.

⁴¹ **31**, 9: *kainoteran*.

lors considérées comme des unités) car seront ensemble le temps antérieur et le temps postérieur. Un troisième argument (21–23) repose sur l'analogie consécutive entre les unités du nombre et les unités du temps: si la monade est l'unité du nombre, l'équivalent pour le temps est le maintenant ou l'instant (*nun*), de sorte que le temps sera composé d'instant, comme le nombre l'est d'unités.

Le fragment **31** est le seul fragment transmis par Simplicius où une nouveauté soit notée. Après avoir rapporté le désaccord de Straton sur la définition du temps comme nombre, Simplicius fait état d'une aporie: pourquoi le temps est-il le nombre de l'antérieur et du postérieur dans le mouvement plutôt que dans le repos? L'aporie est jugée facile à résoudre (789, 18); il suffit de rappeler que telle était déjà l'analyse d'Aristote⁴² qui posait que "puisque le temps est mesure du mouvement, il sera aussi mesure du repos" (*Phys.*, 221b8). Simplicius écarte ensuite (789, 21–25) les objections relatives au temps comme nombre et justifie la position aristotélicienne en corrigeant la conception du nombre dont Straton fait usage qui n'est, de fait, pas conforme à la présentation du "nombre nommé"⁴³ d'Aristote que Simplicius rappelle: "Il a appelé le temps nombre, non parce que le temps est simplement un nombre (car il montre que le temps est un continu, comme la grandeur et le mouvement), mais parce qu'il est connu par la division de l'antérieur et du postérieur dans le continu par ceux qui sont capables de percevoir le temps. Ainsi les arguments issus du nombre ne dérangent rien dans la conception d'Aristote."⁴⁴

Les appréciations de Simplicius peuvent étonner: la voie plus nouvelle empruntée par Straton n'apporte pourtant aucune modification à la conception d'Aristote, pourquoi alors noter une nouveauté qui n'en est pas une? Simplicius est conscient de l'absence de modification, mais qualifier de "plus nouvelle" la voie empruntée par Straton a pu faire naître l'idée (infondée) pour des successeurs lointains d'un progrès d'Aristote à Straton? On peut expliquer l'attitude de Simplicius, si l'on s'aperçoit que "les arguments issus du nombre," prêtés à Straton, sont identiques à ceux de la critique que Plotin adressera à Aristote.⁴⁵ Cette ressemblance entre l'argument de Straton et celui de Plotin⁴⁶ explique que la critique stratonicienne soit

⁴² *Corollarium de loco*, 789, 20.

⁴³ *Physique*, IV, 11, 219b5–9.

⁴⁴ *Physique*, IV, 11, 789, 22–25.

⁴⁵ *Traité 45* (III, 7), 9.

⁴⁶ La reprise des arguments de Straton par Plotin est notée par Guyot, 2009, dans ses notes à la traduction du traité 45, 106 n.314: "il [Plotin] semble suivre les remarques de Straton de Lampsaque."

désignée comme relativement nouvelle par rapport à la tradition du Lycée, puisqu'elle aura une descendance dans une tradition extérieure. Tout montre aussi que la critique plotinienne de la définition aristotélicienne du temps est rejetée par Simplicius au même titre que la critique stratonicienne. Certes Plotin n'est pas nommé, mais le rejet général "des arguments issus du nombre" implique le rejet des arguments semblables de Plotin qui sera nommé seulement plus loin⁴⁷ parce qu'il a ouvert l'étude du "temps premier." Le fait que Simplicius reprenne à son compte *in fine* une solution aristotélicienne des apories sur le temps manifeste clairement que les arguments plotiniens ne l'ont pas convaincu. Ces remarques permettent de situer le contexte problématique des analyses de Simplicius dans le *Corollarium de tempore*. Il est celui des commentateurs néoplatoniciens qui défendent contre Plotin la validité des analyses physiques aristotéliciennes en les intégrant dans un cadre métaphysique platonicien, fondé sur la distinction de deux niveaux,⁴⁸ ici les "deux temps," comme le montrent les références au "temps premier" ou éternité,⁴⁹ ainsi que la conclusion de l'examen des opinions des prédécesseurs qui distingue entre un temps physique dont auraient traité les auteurs précédents (le pseudo-Archytas, Platon, Aristote, Théophraste, Eudème et Straton) et un temps "séparé, abstrait et antérieur si l'on considère la cause."⁵⁰

Du côté de Straton maintenant, la question est de savoir pourquoi il formule la critique qui sera reprise par Plotin à propos du nombre, alors qu'il ne pouvait ignorer, comme le dit Simplicius, qu'il ne s'agissait pas pour Aristote, avec le temps, du nombre au sens simple, mais d'un "nombre nommé." On sait pourtant l'importance de la distinction entre les deux sens du nombre (nommé et nombrable d'une part, par quoi nous nombrons d'autre part), introduite spécialement⁵¹ par Aristote pour expliquer que le temps est un nombre nommé, et les multiples explicitations auxquelles elle donne lieu.⁵² Cette différence peut se traduire par la différence entre

⁴⁷ 790, 30.

⁴⁸ Je paraphrase une remarque de R. Chiaradonna, 2002, 188, faite à propos de la critique plotinienne de la théorie aristotélicienne du mouvement. La doctrine plotinienne du mouvement "viene contestata dai commentatori successivi e, in particolare, da Giamblico. L'intento della sua critica è chiaro : si tratta di difendere contro Plotino la validità dei presupposti aristotelici, integrandoli però in un quadro metafisico platonico, fondato sulla distinzione dei "due mondi" e sulla gerarchia ontologica che deriva da questa distinzione."

⁴⁹ 784, 34.

⁵⁰ 790, 27-29.

⁵¹ *Physique*, IV, 11, 219b6-8.

⁵² *Physique*, IV, 12, 220b20-22.

le nombre cardinal et le nombre ordinal;⁵³ le nombre ordinal convient tout à fait au temps qui est un ordre de succession.⁵⁴ De manière plus générale, on peut se demander quel est le statut de ce qui est présenté comme “objections” de la part de Straton, car dans la suite du fragment **31** le contenu des dites objections ne paraît pas redoutable, comme Simplicius ne manque pas de le rappeler.⁵⁵ S’agit-il de la part de Straton d’un exercice dialectique? On sait par le témoignage de Plutarque que Straton faisait preuve de zèle dialectique (fr. **14**). Ou bien est-ce de la part de Simplicius le fait d’une pratique pédagogique? Quel intérêt Straton avait-il à présenter de nombreuses autres objections que Simplicius ne reprend pas, mais se contente d’évoquer (fr. **31**)? Et surtout que propose-t-il lui-même?

Le fragment **31** donne la définition du temps proposée par Straton. Le temps est “la quantité dans les actions (*to en tais praxesi poson*),” car “nous disons que nous avons navigué longtemps ou peu de temps.” Nous disons “rapide” une action dans laquelle “la quantité entre le début et la fin est petite (*oligon*), tandis qu’est beaucoup ce qui se produit” et le lent est le contraire “la quantité nombreuse (*polu*), tandis que ce qui est fait est peu.” “Une action ou un mouvement sont plus rapides ou plus lents, tandis que la quantité dans laquelle l’action se produit n’est pas plus rapide ou plus lente, mais plus grande ou plus petite, comme le temps. Le jour et la nuit, dit-il, le mois et l’année ne sont pas du temps ni des parties du temps, mais les uns l’illumination et l’ombre, les autres la révolution de la lune et du soleil, mais le temps est la quantité dans laquelle sont ces choses.”

Le temps est donc une quantité, mais comme le regrette Simplicius⁵⁶ “quelle sorte de quantité, ce n’est pas clair.” Même s’il est initialement question d’action,⁵⁷ le “mouvement” apparaît plus tard comme un équivalent de l’action. Donc le temps serait une quantité dans les actions ou les mouvements. Si l’on cherche à déterminer quelle sorte de quantité, pour répondre à l’interrogation de Simplicius, on ne peut que constater que les termes dont se sert Straton (*oligon* et *polu*) renvoient à un nombre, si du moins il conserve un vocabulaire aristotélicien: “Mais il est aussi manifeste qu’on ne dit pas du temps qu’il est rapide et lent, mais qu’il y en a beaucoup ou peu (*polus kai oligos*), qu’il est long et court. En tant que continu en effet, il est long et court, en tant que nombre il y en a beaucoup ou peu. Mais il n’existe pas <de temps> rapide et lent, car il n’y a pas non plus de nombre par lequel

⁵³ Voir sur ce point Goldschmidt, 1982, 47.

⁵⁴ *Catégories*, 6, 5a29.

⁵⁵ 789, 17–25; 28–30.

⁵⁶ 790, 17–19.

⁵⁷ On aura remarqué que “ne rien faire” est une action.

nous comptons qui soit rapide et lent.”⁵⁸ La quantité dont parle Straton sans le dire serait donc un nombre. Mais un nombre de quoi? On ne le sait pas, car il ne saurait s’agir d’un nombre selon l’antérieur et le postérieur, sauf à ne pas prendre en compte la critique du fragment **31**. Si l’on cherchait à trouver un sens intéressant au fait que la quantité soit “dans les actions,” on remarquera aussitôt que la quantité peut aussi bien être “ce dans quoi est l’action” (ligne 69); “être dans” est d’ailleurs donné comme une relation réversible par le même fragment (lignes 82–87).

La définition du temps comme “quantité dans les actions” n’exclut donc pas la formule qui le définirait comme “nombre du mouvement,” puisque le nombre est une quantité et qu’il y a une équivalence entre les actions et les mouvements. De fait, les remarques de Straton sur le fait que “nous parlons de plus ou moins de temps, mais non de temps plus lent ou plus rapide” reprennent des assertions identiques d’Aristote,⁵⁹ justifiées par le fait qu’il n’y a pas de nombre rapide ou lent. On pourrait chercher à donner un sens fort au “dans” de “dans les actions” qui ferait la différence avec le “du” de “du mouvement, puisque, semble-t-il, la différence entre le fait d’être “dans” un état “d’activité” ou “dans” un état de “repos” prend une certaine importance pour Straton. Ces deux points sont aussi les thèmes du fragment **31**: 1) la différence entre activité et repos aux lignes 27–29; 2) “être dans” aux lignes 82–87. Sur le point de l’activité et du repos, il n’y a guère d’innovation, comme le note d’ailleurs Simplicius, puisque, pour Aristote aussi “le temps est mesure du mouvement et du repos”,⁶⁰ sur le thème de “l’être dans,” il semble difficile d’établir une différence consistante étant donné la réversibilité de la relation “être dans” entre le temps et le mouvement ou l’action.

L’indétermination de la quantité, ce *poson*, dont on a dit que rien n’excluait que ce fût un nombre, peut-elle, au contraire, être interprétée de manière positive, comme le fait Rodier:⁶¹ “la définition de Straton ne diffère de celle d’Aristote que par son caractère continuiste et, par suite, objectiviste; le temps proprement dit n’est pas objectif, selon Aristote, précisément parce qu’il est un nombre”? Le sens de la remarque de Rodier se comprend par référence à une question que se pose Aristote dans la *Physique*, à savoir que le nombre présuppose une âme et, plus précisément un intellect, pour nombrer.⁶² La question revient, selon Aristote, à savoir

⁵⁸ *Physique*, IV, 12, 220a32–b5.

⁵⁹ *Physique*, IV, 12, 220b1–5

⁶⁰ *Physique*, IV, 12, 221b7.

⁶¹ Rodier, 1890, 76 n.2.

⁶² *Physique*, IV, 14, 223a16–29.

“s’il peut exister un mouvement sans âme.”⁶³ On accordera qu’il est difficile de penser une *praxis* sans âme; les exemples de Straton renvoient, pour la plupart à des actions humaines. Si l’on fait référence à l’activité des astres, évoquée dans le fragment **31** aux lignes 71–74, on se souviendra que le traité *Du Ciel* attribue une activité (*praxis*) aux astres, parce qu’ils ne sont pas seulement des corps, mais possèdent une âme, liée précisément à leur activité.⁶⁴ Il est donc difficile, voire impossible, de déduire de la formulation stratonicienne: “quantité dans les actions,” une conception objectiviste du temps. Si une âme n’est plus nécessaire pour compter, elle demeure nécessaire pour agir. On a évoqué plus haut la question de la continuité. Sur ces deux points, rien de nouveau ne semble pouvoir être dégagé.

Conclusion

Le jugement de Simplicius selon lequel les arguments critiques de Straton sur le temps comme nombre du mouvement ne peuvent déplacer la conception aristotélicienne est confirmé par l’analyse du fragment qui expose, il est vrai de manière peu développée, les propositions positives du même auteur. La définition du temps comme “quantité [ou combien] dans les actions” soit est réductible à la définition aristotélicienne, soit demeure indéterminée. Il est difficile de trouver en Straton l’ancêtre des conceptions qu’on lui a généreusement prêtées. Le résultat de la comparaison entre Aristote et Straton met plutôt en évidence la complexité des points de vue aristotéliens, relativement auxquels il semble y avoir peu d’innovations proprement stratoniciennes. Il est vrai que la différence d’importance entre le corpus aristotélicien et les maigres fragments de Straton ne permet pas une comparaison équitable. Cependant dans l’état actuel de la transmission, le penseur de la continuité du temps dans l’Antiquité reste Aristote. Simplicius ne peut citer sur ce point un autre ouvrage que le sixième livre de la *Physique*. Ces conclusions négatives poussent à conclure, dans le cas de Straton, à une construction par la réception.

⁶³ *Physique*, IV, 14, 223a 27–28.

⁶⁴ Aristote, *Du Ciel*, II, 12, 292a18–21.

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Sensation et transport

Straton, fragments 64–65 Sharples

Pierre-Marie Morel

Plusieurs spécialistes, parmi lesquels Diels, Rodier et Wehrli, ont soutenu que Straton était un héritier, au moins sous certains aspects, de la physique de Démocrite. Comme cet héritage supposé est néanmoins difficile à relier au versant péripatéticien de la philosophie de Straton, un tel verdict a nécessairement été nuancé par ceux-là même qui le prononçaient, notamment par Rodier: “la physique de Straton de Lampsaque n’est (. . .), dans son ensemble, que la continuation de la physique aristotélicienne,” bien qu’il ait “entrevu le principe de l’uniformité des lois de la nature.”¹ Straton préparerait ainsi, tout au moins selon la perspective positive qui était celle de Rodier, l’avènement de la science moderne.

Les fragments **64–65**, qui traitent respectivement du visible et de l’audible, paraissent à première vue témoigner d’une influence atomiste. Ils font appel en effet à une théorie de l’émanation pour rendre compte de la sensation: émanation des couleurs dans le premier cas, de la résonance sonore dans le second. L’opposition à l’explication aristotélicienne de la sensation et de la nature des objets sensibles est évidente. Straton semble donc

¹ Rodier (1890) 127.

pencher en faveur d'un modèle théorique alternatif, dont le représentant le plus facilement identifiable est Démocrite, ou sa mouvance. Nous verrons cependant que l'opposition à Aristote n'est que partielle et qu'elle ne suffit pas, en tout état de cause, à ranger Straton aux côtés des atomistes sur le point qui nous intéresse.

Straton et Démocrite

Sur le strict plan historique, il n'est pas douteux que Démocrite a influencé les philosophes de la période de Straton, en particulier au sein du Lycée. A l'époque de Théophraste, Démocrite est lu pour lui-même, directement semble-t-il, en marge de la critique aristotélicienne. Il exerce même peut-être une certaine influence sur la philosophie naturelle du Lycée et particulièrement sur Héraclide Pontique. Celui-ci aurait, selon Diogène Laërce, écrit deux livres sur l'Abdérain.² Héraclide développe toutefois un atomisme assez différent³ de celui de Démocrite: il conçoit les atomes comme des "masses séparées," *anarmoi onkoi*, et leur attribue des qualités. Rappelons également qu'Aristoxène rapporte dans ses *Notes historiques* que Platon fut dissuadé de brûler ses œuvres à cause de leur diffusion et qu'il témoigne peut-être ainsi d'une certaine considération pour Démocrite.⁴ Simplicius, par ailleurs, fait état d'une lecture de Démocrite par Eudème.⁵ Concernant le rapport entre Straton et Épicure, l'hypothèse d'un contact intellectuel n'est généralement pas envisagée de très près, bien qu'ils soient exactement contemporains. Rappelons que Straton meurt en 268/270 et Épicure en 270/271.

Pour le dire dès maintenant, il faut renoncer à toute *Quellenforschung* rigoureuse en ce qui concerne le rapport de Démocrite à Straton. Tout au plus pouvons-nous établir une liste des affinités objectives.

En premier lieu, on notera que Straton adopte une cosmologie mécaniste, là même où il se distingue de Démocrite. On le voit notamment chez Cicéron:

² Voir Wehrli (1969b): Diog. Laërce, V, 87; 88. Héraclide se nourrit également de l'enseignement de l'Académie à laquelle il appartient de 360 à 339. Voir Gottschalk (1980) 2. D'après cette étude, p. 142, Démocrite serait même le seul auteur, hors de l'Académie, à avoir exercé une réelle influence sur Héraclide. Sur la réception de l'atomisme abdérain à cette période et chez les médecins en particulier, voir Stückelberger (1984).

³ Wehrli (1969b) 101, voit plutôt dans l'atomisme d'Héraclide une influence pythagoricienne.

⁴ Diog. Laërce, IX, 40, fr. 131 Wehrli [DK 68 A 1].

⁵ In Aristotelis *Physica*, 330, 14, fr. 54 Wehrli [DK 68 A 68].

Straton (. . .) déclare qu'il ne se sert pas de l'activité divine pour fabriquer le monde. Il enseigne que toutes les choses existantes, de quelque sorte qu'elles soient, ont été produites par la nature, bien qu'il ne suive pas celui qui dit que ce monde a été formé de corps rugueux et lisses, crochus et recourbés, entremêlés de vide — il juge que ce sont des songes de la part de Démocrite, qui ne les enseigne pas mais les souhaite —, mais lui-même, examinant une par une les différentes parties du monde, enseigne que chacune, qu'elle soit ou doive être produite, est ou a été produite par les poids et mouvements naturels.⁶

Dans d'autres témoignages, les affinités sont plus nettes. Ainsi, chez Minucius Felix:

Et Démocrite? Bien qu'il soit le premier inventeur des atomes, ne parle-t-il pas fort souvent de la nature qui dispense les images ou de l'intelligence comme dieu? De même Straton parlant lui aussi de la nature.⁷

Disons tout au moins que Straton adopte une vision globale du monde très proche de celle de Démocrite et de la nébuleuse "matérialiste" qui a pu se constituer autour de lui et à sa suite. Ainsi, selon Cicéron:

Son disciple <i.e.: celui de Théophraste> Straton, celui qu'on appelle "le physicien" ne mérite pas non plus d'être écouté: il pense que la puissance divine réside tout entière dans la nature, qui renferme les causes de la génération, de la croissance, du déclin, mais est dépourvue de toute sensibilité et de toute forme.⁸

Voir encore le témoignage de Plutarque:

(. . .) ce qui est par nature suit ce qui est par fortune, car le hasard (*automaton*) donne le point de départ et, ensuite, chaque événement naturel se déroule jusqu'à son terme.⁹

⁶ Cicéron, *Ac. Prior*, II, 38, 121 = **18**.

⁷ Minucius Felix, 19, 8 = **19B** (trad. J. Beaujeu).

⁸ Cicéron, *De natura deorum*, I, 13, 35 = **19A** (trad. C. Auvray-Assayas).

⁹ *Contre Colotès*, 1115 B = **20**. Rappelons qu'il n'y a pas lieu d'opposer chez Démocrite "hasard" et "nécessité", les deux termes renvoyant également à la spontanéité avec laquelle s'accomplissent les phénomènes naturels. Épicure attaque très vraisemblablement Démocrite lorsqu'il critique ceux pour qui "la nécessité et le hasard sont causes de toutes choses" (*De la nature*, 34.30 Arrighetti). Voir Morel (1996) 273–75. Démocrite peut donc être évoqué comme étant le philosophe de l'*automaton*, tout autant que celui de l'*anankè*.

Enfin, Straton admet qu'il y ait ou qu'il doive y avoir du vide, à l'intérieur des mondes, dans les interstices laissés vacants par la structure poreuse de la matière.¹⁰

Les restrictions que l'on peut apporter à ces rapprochements sont néanmoins nombreuses. J'en dénombrerai principalement quatre:

- Les corps, pour Straton, sont continûment divisibles.
- Il n'y a pas de vide à l'extérieur du monde. Le vide de Straton n'est pas un vide élémentaire et absolu, mais plutôt un vide fonctionnel et relatif. Les fragments de Straton ne montrent rien d'équivalent, en tout cas, à ce que dit Démocrite à propos du vide, à savoir qu'il est un principe, au même titre que les atomes, et qu'il constitue un non-être qui n'existerait pas moins que l'être.
- Straton n'admet apparemment qu'un seul monde (**26A–B**).
- Démocrite explique l'altération — ou son équivalent, dans une physique qui, selon Aristote, est incapable de rendre compte d'un véritable changement qualitatif — par la forme, l'ordre et la position des atomes et, par conséquent, en premier lieu par le mouvement; Straton l'explique par la nature "poreuse" de la matière.¹¹ Pour les atomistes, le mouvement est premier. Il semble que pour Straton, les pores soient les conditions du mouvement. Nous reviendrons sur le rôle du mouvement dans la conception de l'altération selon Straton, car il s'avère essentiel pour comprendre sa conception de la sensation à distance.

La théorie de la sensation, dans la mesure où elle suppose une théorie de l'émanation et invite à ranger Straton aux côtés de Démocrite plutôt qu'aux côtés d'Aristote, constitue *a priori* un élément crucial de ce dossier. F. Wehrli va jusqu'à conclure que Straton se conforme à la doctrine atomiste en expliquant les expériences sensibles par des émanations corporelles.¹² D'une manière générale, la psychologie de Straton est assez subversive par rapport à celle d'Aristote: pour Straton, l'âme-intellect est assimilable à un souffle, et elle est le substrat de tous les états psychiques, de la sensation à la pensée.¹³ L'âme a une partie principale, l'hégémonique, qui est située dans

¹⁰ Voir **26A–C**.

¹¹ Baffioni (1981) 275.

¹² Wehrli (1983) 573. Voir aussi Wehrli (1969a) 75: "Die Wahrnehmung als Folge körperlicher Emanationen ist auch atomistische Lehre."

¹³ Sur la dimension "physicaliste" de la psychologie de Straton, je renvoie à l'étude de D. Modrak dans le même volume (Chapitre 11: "Physicalism in Strato's Psychology"). Sur la

la région des sourcils. On sait par ailleurs qu'Aristote n'utilise pas le terme d' "hégémonique" lorsqu'il désigne l'intellect ou la faculté intellectuelle, et plus encore, qu'il reste extrêmement évasif sur l'éventuelle localisation de cette faculté. Si la faculté principale de l'âme — siège de la sensation commune et de la pensée — peut être située quelque part, c'est, pour Aristote, dans la région du cœur. Straton et Aristote se placent donc de part et d'autre de la ligne de partage qui oppose les cardiocentristes et les encéphalocentristes.

Voyons maintenant les éléments textuels dont nous disposons sur les sensations, à savoir deux textes très brefs et elliptiques. Je souligne dans ma traduction les expressions sur lesquelles je vais plus particulièrement revenir:

Straton dit que les couleurs *se transportent depuis les corps* (*apo tôn sômatôn pherestai*), et qu'elles donnent à l'air intermédiaire la couleur <des corps>. (Aétius, IV, 13, 7 — *De la vision* = **64**)

Que ce soit en fait parce que la forme <des sons> est changée *pendant leur transport* (*en tê phora*), ou bien parce que la tension du coup est relâchée, comme Straton le dit (il dit en effet que la production des différents sons ne dépend pas du fait que l'air est formé d'une certaine manière, mais de l'inégalité du coup), dans tous les cas, quelle que soit la manière dont l'audition diffère *du transport* <du son> (*hê phora*), cela se produit parce que, dans l'intervalle intermédiaire *au travers duquel s'effectue le transport* (*di' hou pheretai*), de l'air reçoit un coup d'une autre <portion> d'air. (Alexandre d'Aphrodise, *In Aristotelis De sensu*, 6, 126.19 = **65**)

Diogène Laërce signale en outre dans le catalogue de Straton trois traités sur la sensation ou les sensibles: *De la vision*, *De la sensation* et *Des couleurs*.¹⁴

Rappelons que ces textes, comme tous ceux dont nous disposons sur Straton, ne sont que des "témoignages" et non pas des "fragments," en tout cas pas des fragments *de* Straton lui-même. Ce n'est donc que par commodité, et en suivant l'usage initié par F. Wehrli, que nous parlons ici de "fragments." Étant donné le caractère à la fois très lacunaire et indirect du matériau, ces textes ne sauraient permettre une reconstruction satisfaisante de la théorie de la sensation qui est celle de Straton. Aussi mon objet est-il, plus modestement, d'esquisser le contexte et les enjeux dialectiques possibles de ces deux passages.

place de Straton (concernant ce point précis) dans la tradition péripatéticienne, voir également Sharples (2006) 172–73.

¹⁴ Diog. Laërce, V, 59 = **1**.

En premier lieu, peut-on assurer que ces textes témoignent d'une influence démocritéenne? La sensation suppose une réception qui semble être de nature matérielle et, corrélativement, une émanation. Ce phénomène peut faire songer à l'explication démocritéenne de la vision par réception d'effluves porteurs de simulacres en provenance de l'objet vu. C'est ce que suggère Plutarque, sur un mode très général et sans plus de précisions:

Straton le physicien démontre que, sans l'intellection, aucune sensation ne se produit. Souvent en effet des lettres qui viennent à la rencontre (*epiporeuomenous*) de notre vue, des paroles qui frappent (*prospiptontes*) notre ouïe nous échappent et nous fuient, parce que notre esprit est occupé à autre chose.¹⁵

Il est cependant assez difficile de savoir à quoi correspond exactement ce que décrit le fragment sur la vision. Straton considère-t-il que les effluves, ou les simulacres (*eidôla*) qui les composent, sont eux-mêmes colorés? Alexandre d'Aphrodise, qui semble avoir une certaine connaissance de Straton, examine et critique cette hypothèse dans la *Mantissa*, mais il est impossible d'identifier sa cible avec certitude.¹⁶ Faut-il, d'autre part, imaginer une coloration de l'air intermédiaire qui, de portion en portion, conduirait les couleurs, et ainsi les formes des objets, jusqu'à la pupille? Toutefois, dans ce cas, on ne voit pas en quoi il y aurait là émanation. Il s'agirait plutôt d'une réforme de la théorie aristotélécienne du diaphane, si nous avons affaire à une réflexion par l'intermédiaire de la transparence du milieu. On noterait alors cette différence, fondamentale par rapport à Aristote, qu'il n'y aurait pas d'illumination immédiate. Le diaphane de Straton serait, non plus une propriété des corps (la transparence) qui s'actualiserait comme couleur dès qu'il y a sensation, mais un corps qui s'éclairerait progressivement, du fait de la contiguïté des portions ou parties qui le constituent. La coloration serait l'effet de cette transparence. Je reviendrai plus loin sur ce point.

Toutefois, il est probable que l'explication soit différente. En effet, pour Straton, la lumière est un corps et non pas, comme chez Aristote, l'acte du diaphane.¹⁷ **30A**¹⁸ et **30B**¹⁹ permettent de l'établir, affirmant que la lumière et la chaleur ne pourraient pas traverser les corps s'il n'y avait pas des pores

¹⁵ Plutarque, *De sollertia animalium*, III, 961 A = **62**.

¹⁶ Alexandre d'Aphrodise, *Supplément au De anima* (Mantissa), 11, 136.25; 12, 137.30–33. En faveur d'une allusion polémique contre Démocrite, voir Avotins (1980) 453.

¹⁷ Voir Rodier (1890) 95, n. 3.

¹⁸ Simplicius, *In Aristotelis Physica*, IV, 9, 693.10 = **30A**.

¹⁹ Héron, *Alexandrinus Pneumatica*, I, 24.20 = **30B**.

vides pour les laisser passer, de même que les rayons solaires traversent l'eau, sans la faire déborder. Dans ce cas, il y aurait bien émanation des couleurs depuis l'objet perçu, au travers du milieu. Reste alors à expliquer la coloration elle-même du milieu intermédiaire: l'air est-il teinté dans la masse, c'est-à-dire imprégné de la couleur de l'objet, ou bien la laisse-t-il simplement passer par ses pores, donnant ainsi une "impression" globale de couleur? Sur ce point, nous devons nous contenter de conjectures.

Chez Démocrite, l'air qui se réfléchit sur la pupille semble également se colorer, dès lors que l'air intermédiaire est comprimé sous l'effet des émanations. On peut déceler là un indice de rapprochement, et c'est probablement ce qui incite F. Wehrli à mentionner le passage cité ci-dessous lorsqu'il commente le texte de Straton.²⁰ Toutefois, les témoignages anciens, outre qu'ils restent imprécis sur les conditions physiques de cette coloration du milieu, attribuent à l'Abdérain deux théories différentes de la vision. D'un côté, certains témoins proposent une explication simple de la vision, qui semble s'accorder avec ce que l'on trouve chez Straton: l'émanation directe d'un flux de matière en provenance de l'objet vu. De l'autre, dans le *De sensibus* de Théophraste, le texte le plus complet sur l'explication démocratéenne de la sensation, nous sommes face à un processus nettement plus compliqué, où l'air intermédiaire paraît avoir une fonction plus importante que celle de simple milieu traversé. Le passage crucial est le suivant:

car l'image reflétée ne se produit pas directement dans la pupille, mais l'air intermédiaire entre la vue et ce qui est vu reçoit une empreinte, étant comprimé par ce qui est vu et ce qui voit, car toute chose produit en effet toujours quelque effluve. Ensuite, l'air, étant solide et de couleur différente, se réfléchit dans les yeux humides. (Théophraste, *De sensibus*, §50 [DK 68 A 135])

Le processus décrit par Théophraste est plus complexe qu'une simple transmission au travers de l'air intermédiaire, puisque celui-ci joue le rôle de porte-empreinte et de facteur de réflexion, ce dont il n'est pas question dans notre texte de Straton. Par ailleurs, il n'est pas certain qu'il soit fait mention, chez Démocrite, d'une coloration effective du milieu intermédiaire, la dernière phrase du passage cité signalant simplement que "l'air, étant solide et de couleur différente (*allochrôn*), se réfléchit dans les yeux humides." Or, cela ne veut pas dire qu'il a été coloré par les émanations. Enfin, le témoignage de Théophraste fait état d'une double émanation, puisque des effluves proviennent, non seulement de l'objet vu, mais encore de "ce qui voit," en vertu du principe selon lequel "toute chose produit

²⁰ Wehrli (1969a) 75.

toujours quelque effluve.”²¹ Rien de tel, dans le fragment de Straton tel qu’il nous est restitué.

Examinons maintenant le fragment sur l’audition. F. Wehrli²² propose un rapprochement “dans les grandes lignes” avec le paragraphe 55 du *De sensibus* de Théophraste et, de ce fait, avec Démocrite. Toutefois, il s’agit dans le texte de Théophraste du mouvement produit par l’air qui pénètre le vide. Ce phénomène est assurément compatible avec le témoignage d’Alexandre sur Straton, mais sans plus: ce dernier fragment concerne en effet plus particulièrement la déformation des sons. Les points de rapprochement sont finalement très généraux. On doit par ailleurs invoquer un autre témoignage, attribué à Aétius,²³ qui s’oppose directement au texte d’Alexandre. Il fait état, en effet, d’une explication de la transmission du son, chez Démocrite, par “émiettement de l’air en corps de figures semblables.” Il semble bien qu’il s’agisse du type même de processus que refuse Straton, à savoir un changement de configuration de l’air intermédiaire. On trouve le même refus chez Épicure, point de rapprochement plus net entre Straton et la tradition atomiste, en tout cas sur ce point précis:

Il ne faut donc pas croire que l’air lui-même soit configuré par l’émission de la voix ou par quelque autre émission du même genre – car il faudrait une très grande quantité de sons vocaux, pour qu’il soit affecté par la voix.

²¹ Pour l’attribution à Démocrite d’une théorie de l’émanation directe, par opposition à la théorie de la double émanation restituée par Théophraste, voir les témoignages d’Aétius (IV, 13, 1 [DK 67 A 29]; IV, 8, 10 [DK 67 A 30]), Diogène Laërce (IX, 44 [DK 68 A 1]), Alexandre d’Aphrodise (*In Aristotelis De sensu*, 24.14; 56.12 [DK 67 A 29]) et Aristote (*De sensu*, 2, 438a5 [DK 68 A 121]). En faveur de la double émanation, en plus du témoignage de Théophraste, il faut mentionner une notice d’Aétius faisant état de la réflexion, dans les miroirs, des simulacres qui émanent de la personne (IV, 14, 2 [DK 67 A 31]). Il est douteux que ces divergences soient le signe d’une évolution de la théorie démocritéenne, comme on l’a parfois suggéré. Il peut y avoir en revanche conflit de fiabilité entre les deux séries de témoignages. Sur cette question disputée, voir notamment Baldes (1975); Burkert (1977). Il est possible, également, que Théophraste soit simplement plus attentif que les autres témoins à une seule et même doctrine, dont il choisit de présenter la version raffinée, tandis que ceux-là restituent la version simplifiée. Voir en ce sens Morel (1996) 233–36. La richesse et la précision du témoignage de Théophraste plaident nettement en sa faveur. Rappelons enfin que Démocrite n’est pas la seule référence possible dès lors qu’il est question de double émanation. Voir Platon, *Timée*, 45 B–D, auquel fait manifestement référence Alexandre d’Aphrodise lorsqu’il critique “ceux qui expliquent la vision par une émanation provenant des deux parties” (*Supplément au De anima* (Mantissa), 12, 136.30–138.2). Voir en ce sens Sharples (2004) 113–15; Accattino (2005) 198.

²² Wehrli (1969a) 75.

²³ IV, 19, 3 [DK 68 A 128].

En réalité, aussitôt que le choc s'effectue en nous, quand nous projetons notre voix, il donne lieu à l'expulsion de certains corpuscules qui finissent par constituer un flux pneumatique,²⁴ et cette expulsion produit en nous l'affection auditive. (*Lettre à Hérodote*, §53)

Les épicuriens récusent le modèle de la propagation du son par transformation de l'air, au profit du modèle de la pénétration, le flux sonore étant lui-même un souffle qui s'insinue dans les intervalles des particules d'air ou de tout autre corps qu'il traverse.²⁵ Ils s'opposent en cela à Démocrite. Aussi certains commentateurs, comme Gottschalk et Repici,²⁶ s'abstiennent avec raison de voir dans le texte de Straton une influence positive de Démocrite.

Le texte de Straton est par ailleurs assez obscur: la "tension" du coup est-elle la cause même de la transmission? Il semblerait plutôt que ce soit sa vibration sonore. On doit en tout cas admettre deux choses: (a) qu'il n'est pas ici question d'expliquer la transmission elle-même, mais la différence et le décalage temporel entre le son originellement produit et le son effectivement entendu ; et (b) que la cause invoquée est le "relâchement" (*ekluesthai*) de la tension du choc initial et non pas la tension elle-même. Rodier²⁷ s'est d'ailleurs prononcé en faveur de l'interprétation vibratoire, tout comme Gottschalk dans l'analyse déjà citée: le mouvement du son serait composé d'une série de mouvements de va-et-vient, c'est-à-dire de vibrations ou d'oscillations, interprétation qui peut se fonder sur le *De Audibilibus* (*Peri akoustôn*) péripatéticien, que Gottschalk attribue pour sa part à Straton. Ainsi, on peut supposer que "l'inégalité" — qui serait la cause véritable, par opposition à la formation de l'air, des différences entre les sons — résulte de la nature vibratoire de la résonance. Toutefois, il reste à déterminer dans ce cas s'il y a encore *émanation*, ou s'il y a plutôt *répercussion*, comme le suggère Alexandre dans la proposition finale — non reprise par Wehrli. La transmission du son s'expliquerait dans ce cas par la contiguïté des portions d'air, c'est-à-dire par une sorte d'*antiperistasis*.

Les deux seuls points qui justifient un rapprochement avec l'explication de l'audition chez Démocrite sont finalement les suivants. (a) Straton, comme Démocrite et les atomistes en général, explique les sensations par un contact — même si, pour Straton, la sensation n'est pas située dans la partie

²⁴ Ou: "qui a la nature du souffle" (*pneumatôdous*).

²⁵ Voir aussi Lucrèce, *De rerum natura*, IV, 599–614.

²⁶ Gottschalk (1968) 453; Repici (1988) 24 et n.110, 45.

²⁷ Rodier (1890) 71: "la diversité des sons a pour cause l'inégalité des vibrations de l'air qui les produisent."

qui est en contact avec ce qui émane de l'objet, mais dans l'hégémonique. (b) Le facteur premier de la sensation est un transport ou translation et, au moins dans le cas de la vision, une émanation. La sensation, en tout cas, n'est pas réductible à la transmission d'une pure détermination formelle, d'un *eidos* sans matière, comme dans la théorie d'Aristote.

Sensation et transport chez Straton et Aristote

Dans la mesure où l'interprétation moderne de la position de Straton est souvent prise dans un mouvement de balancier entre Démocrite et Aristote, il convient maintenant d'envisager plus précisément ce qui peut rapprocher le philosophe de Lampsaque de ce dernier sur la question de la sensation.

Concernant la vision, l'opposition est claire entre la théorie de Straton et la théorie de l'illumination du diaphane chez Aristote. Pour Straton, la lumière est corporelle et traverse le milieu, alors que le diaphane aristotélicien — dont la lumière est l'actualisation — est une nature et une puissance (*dunamis*) commune à tous les corps, propriété par laquelle ils sont translucides.²⁸ Cette propriété s'actualise comme lumière par l'effet de la présence du visible coloré. La couleur ne se dépose donc pas sur le milieu, elle ne le teinte pas et elle n'est pas transmise matériellement: elle apparaît par transparence parce qu'elle est "ce qui meut ce qui est actuellement transparent."²⁹ Il est donc logique qu'Aristote rejette les explications "émanationnistes" des couleurs, comme celle des atomistes:

Dire en tout cas, comme le font les anciens, que la couleur est un effluve et que l'on voit par une cause de ce type, c'est absurde. Dans tous les cas, en effet, ils sont dans la nécessité d'expliquer la sensation par un contact, de sorte qu'il eût mieux valu dire directement que la sensation vient du mouvement imprimé par le sensible à l'intermédiaire qui le sépare du sens, et qu'elle se produit donc par un contact et non par les effluves. (Aristote, *De sensu*, 3, 440a15–20)

Ce texte est particulièrement intéressant, parce qu'il refuse la réduction de la sensation au contact, argument repris plus loin contre Démocrite en 4, 442a29sq., mais aussi parce qu'il se place dans la logique de l'adversaire: s'il s'agissait d'expliquer la sensation par le contact, on pouvait faire l'économie des effluves. Dans l'optique d'une explication matérialiste de la vision — une explication qui suppose un contact matériel —, une répercussion de

²⁸ Voir *De sensu*, 3, 439a21; *De anima*, II, 7, 418b8sq.

²⁹ Aristote, *De anima*, II, 7, 418b1; 419a10.

chocs ou de mouvements par l'intermédiaire du milieu suffirait. D'où le problème suivant: si les couleurs ne se voient pas par transparence mais par contact, quelle serait, dans un tel cadre théorique, la meilleure explication? La réponse de Straton serait peut-être la suivante: les couleurs des objets traversent l'air intermédiaire en le colorant, et c'est en ce sens — et non pas nécessairement en adoptant la théorie démocritéenne des effluves — qu'il y a émanation.

Dans le même ordre d'idée, un des arguments clés d'Aristote en faveur de sa théorie de l'incorporité de la lumière et du diaphane, consiste à invoquer la définition du lieu et à rappeler que "deux corps ne peuvent se trouver au même endroit."³⁰ La réponse de Straton est peut-être: "d'accord ! Et c'est bien pour cela qu'il faut supposer des interstices vides qui laissent passer les couleurs." Ainsi, les termes du problème qui se pose à Straton sont probablement ceux que définit Aristote, dans le contexte dialectique de son opposition aux théories antérieures de la perception.

Revenons maintenant à l'audition. La situation, du point de vue d'Aristote, est différente. D'un côté, comme dans le cas de la vision, la sensation s'explique par la transmission d'un *eidos* et non par un apport de matière, selon le modèle de la cire et du cachet hérité du *Théétète*³¹ et rappelé en *De anima*, II, 12, 424a17–20: de même que l'empreinte ne conserve rien du sceau qui a frappé la cire, la sensation n'est pas la conservation matérielle d'une partie de l'objet senti. Il en va, de ce point de vue, de l'audition comme de la vision. De l'autre côté, le cas de l'audition est différent de celui de la vision, car il est clair que l'arrivée du son est progressive, ce qui signifie que le milieu intermédiaire joue un rôle différent de celui qui est le sien lorsqu'il est immédiatement illuminé par le visible. La différence est indiquée dans le *De sensu*:

On pourrait encore se demander si les sensibles ou les mouvements qui partent des sensibles (quelle que soit celle de ces deux modalités selon laquelle la sensation se produit), lorsqu'ils s'actualisent, parviennent d'abord dans le milieu, comme c'est manifestement le cas de l'odeur et du son. En effet, c'est l'individu situé à proximité qui sent l'odeur en premier lieu, et le son nous parvient après le choc qui le produit. En va-t-il donc ainsi avec le visible et la lumière, comme le dit précisément Empédocle, pour qui la lumière provenant du Soleil parvient d'abord dans le milieu intermédiaire, pour ensuite atteindre la vue ou arriver sur la Terre? (Aristote, *De sensu*, 6, 446a20–28)

³⁰ *De anima*, II, 7, 418b17.

³¹ 194 C.

La suite du texte va montrer qu'Empédocle se trompe en concevant la vision comme l'audition et l'olfaction. Il faut, selon Aristote, distinguer entre l'acte immédiat d'altération que constitue la sensation (on entend et, simultanément, on a entendu), et le mouvement progressif qui provoque un tel acte.³² À la différence de la vision, l'audition ne s'explique pas seulement par une actualisation immédiate de la faculté sensible, mais encore par une transmission de mouvements, c'est-à-dire par un rapport progressif entre le sentant et le senti: le son est un certain mouvement de l'air, de sorte que le rapport entre l'audible et l'audition s'accomplit progressivement, en fonction des conditions matérielles et mécaniques de ce mouvement.³³

Ce point est très important pour reconstituer le contexte théorique et dialectique qui a pu susciter la réaction de Straton. Comme l'avait déjà vu Platon,³⁴ l'explication de la transmission des sons impose un modèle mécanique et cinématique, celui du transport. Aristote ne l'ignore pas. Il le dit très clairement, non seulement dans le *De sensu*, mais aussi dans le *De anima*:

Le son en acte advient toujours par rapport à quelque chose et dans quelque chose. C'est en effet un coup qui le produit. C'est pourquoi il est impossible qu'il y ait du son avec une seule chose, car ce qui frappe et ce qui est frappé sont distincts, de sorte que ce qui résonne, résonne par rapport à quelque chose. Par ailleurs, il n'y a pas de coup *sans transport* (*aneu phoras*). (Aristote, *De anima*, II, 8, 419b9–13)

Le coup est en effet une interaction matérielle et un mouvement local, ou tout au moins une cause immédiate de mouvement local, de sorte que le son qui en résulte suppose originellement le transport. Le son s'explique donc, au moins sous l'aspect de sa causalité efficiente, comme l'effet d'un moteur sur un mobile, en l'occurrence le milieu lui-même. Ainsi, bien que l'audition, comme toute autre sensation, soit irréductible à l'explication mécaniste, elle suppose un mouvement local prorogé, répercuté grâce à la contiguïté des parties du milieu.

Dans ces conditions, le témoignage d'Alexandre sur l'audition chez Straton apparaît sous un jour différent. Ce n'est sans doute pas un hasard s'il évoque la position de Straton dans son commentaire du *De sensu*: celle-ci ne consiste pas à rejeter purement et simplement celle d'Aristote. Straton est

³² Voir *De sensu*, 6, 446b2–6.

³³ D'où l'image du rebond (*aphalsis*), en *De anima*, II, 8, 420a21–3. Voir également 419b25–7: l'écho est comme le rebond d'une balle, d'une partie de l'air sur une autre.

³⁴ *Timée*, 67 B–C; 80 A–B.

vraisemblablement aux côtés d'Aristote sur cette question. Pour l'un comme pour l'autre, comme l'a soutenu Gottschalk, il s'agit toujours d'un mouvement dans un milieu immobile, et l'hypothèse vibratoire — si c'est bien celle que l'on doit attribuer à Straton — n'est qu'un développement logique et naturel de ce qu'Aristote avait déjà institué,³⁵ dans la mesure où elle met l'accent sur la fonction du transport dans l'explication de l'audition.

Il y a toutefois divergence entre Straton et Aristote sur un point essentiel. Pour Straton, l'audition, même si elle est une altération, une *alloiôsis*, résulte d'un mouvement local et des principes mécaniques d'enchaînement des mouvements locaux. En insistant sur la *phora*, le transport, dont j'ai souligné les mentions dans ma traduction, il propose donc une explication fondamentalement mécaniste de la sensation. En ce sens encore, il se démarque du Stagirite tout en prolongeant certaines des voies que ce dernier avait ouvertes. Aristote, en effet, adopte une attitude ambivalente à propos de l'explication physique de la sensation. D'un côté, il distingue nettement entre altération et transport, et définit la sensation comme une sorte d'altération sans rapport avec le mouvement local.³⁶ Il est remarquable qu'Aristote, là même où il observe que le son et l'odeur se propagent progressivement et non pas immédiatement, rappelle ce principe général: "d'une manière générale, il n'y a aucune ressemblance entre l'altération et le transport."³⁷ La sensation est perception d'une forme, abstraction faite de la matière du substrat objectif — la blancheur, sans la matière de Socrate, le support de cette blancheur —, de sorte que le sentir n'est jamais réductible au processus physiologique qui peut, par ailleurs, l'accompagner. De l'autre, Aristote prête une attention réelle aux processus mécaniques qui entrent en jeu dans certains types de phénomènes naturels, y compris dans la formation de certaines représentations et notamment dans la formation des images (*phantasiai*). Celles-ci s'expliquent originellement par un processus physiologique de dérivation à partir de la sensation: l'affection que produit la sensation en acte transmet le mouvement qui l'anime par contiguïté, et cela même en l'absence du moteur que constitue l'objet sensible, et l'affection sensorielle est jusqu'à un certain point comparable à un

³⁵ Voir Gottschalk (1968) 445sq.

³⁶ Voir *De anima*, II, 5, 416b33–35. Je n'entrerai pas ici dans le vaste débat qui concerne la nature même de cette altération. Il n'y a pas consensus, en effet, sur la question de savoir si la sensation est une pure transmission de forme, sans modification physiologique, ou bien si elle implique immédiatement une modification effective de l'organe sensoriel. Il me suffit de noter qu'Aristote refuse la réduction de la sensation au mouvement local dont seraient coupables à ses yeux les théoriciens de l'émanation.

³⁷ *De sensu*, 6, 446b28–29.

mouvement local.³⁸ De fait, l'impression sensible (*aisthèma*) produite par la sensation en acte ne réside pas seulement dans les organes sensoriels périphériques, mais aussi dans le cœur, l'organe sensoriel principal.³⁹

Il semble donc qu'à propos de la sensation à distance l'attitude de Straton consiste à insister, tout à la fois *avec* Aristote et *contre* lui, sur la fonction du transport. Contrairement à ce qu'affirme avec force Aristote en *De sensu* 6, Straton estime que son rôle n'est pas moins important dans le cas de la vision que dans celui de l'audition. Concernant l'audition elle-même, la fonction du transport est essentielle pour Aristote comme pour Straton, mais c'est peut-être à Straton que revient le mérite de l'assumer pleinement et de le reconnaître ouvertement.

D'une manière générale, le déplacement d'accent auquel Straton procède par rapport à Aristote n'est pas négligeable. Il revient à dire, en effet, que ce qu'il y a de plus important dans toute sensation, c'est le transport, qu'il y ait ou non émanation à proprement parler. Cela vaut, non seulement à l'intérieur du corps, dans le rapport entre les organes sensoriels et l'hégémonique — voir les fragments **62–66** —, mais aussi dans le rapport entre le sentant et le sensible. Straton conduit ainsi à brouiller, dans le domaine du sentir, la distinction aristotélicienne fondamentale entre altération et mouvement local. La présence ambiante d'un certain "démocritéisme" diffus n'est peut-être pas étrangère à ce déplacement. Toutefois, elle n'est certainement pas le facteur le plus déterminant, si l'on retient l'hypothèse selon laquelle Straton formule ses propres positions dans le cadre dialectique et problématique qu'Aristote avait institué. Dans l'état actuel de notre documentation, ce n'est évidemment qu'une hypothèse, mais elle invite au moins à remettre en question l'idée traditionnelle d'une dépendance exclusive de Straton par rapport à Démocrite sur la question de la sensation.

³⁸ Voir *De insomniis*, 2, 459a23–b7, où la formation et la persistance des impressions sensibles dans les organes sensoriels sont explicitement comparées au changement de lieu. Sur l'application à la psychologie du principe de la transmission du mouvement en l'absence du moteur, forme d'*antiperistasis*, voir, dans les *Parva naturalia*: *De memoria*, 2, 453a14–31; *De somno*, 3, 457a27; *De insomniis*, 3, 461a22; *De divinatione*, 2, 463b17, 464a32. Voir encore *Problemata*, XXX, 1. Pour la théorie générale de la transmission du mouvement en l'absence d'un contact direct avec le moteur et par contiguïté, voir notamment *Phys.*, VIII, 10, 266b28–267a20. Sur l'insertion de ces aspects mécanistes de la théorie de la sensation dans le cadre général de la théorie hylémorphique, je renvoie à Morel (2007) 56–69; 107–8.

³⁹ *De insomniis*, 2, 459b5–7.

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Physicalism in Strato's Psychology

Deborah K. W. Modrak

Strato breaks new ground in theorizing about cognitive activity. He envisages a unitary consciousness of all cognitive objects whether perceptible or intelligible. This consciousness arises at a specific physical location in the head. A striking feature of this account is its compatibility with very different approaches to the nature of the mental and the relation between mind and body. A dualist could accept much of Strato's picture of mental activity, as could a thoroughgoing physicalist. A credible case could be made for attributing either of these positions to Strato. Or, perhaps, he is agnostic with respect to commitments about the nature of mind. Tempting as the last option is, I shall, nevertheless, argue that a careful reading of the relevant fragments will establish Strato's commitment to physicalism.

For purposes of this paper, I shall follow Aristotle's lead in distinguishing between the dualism of Plato and the Pythagoreans, on the one hand, and the reductive materialism of the atomists, on the other, in *De Anima* 1. In the *Phaedo*, Plato argues that mind (soul) and body are distinct because their properties are oppositional (78B–80C). The body belongs to the visible realm; the soul does not. The body is multiform; the soul is the same as itself. The body is subject to dissolution; the soul is not. By contrast,

the atomists held that both body and soul were made up of the same kind of stuff, atoms. All psychic phenomena are to be explained by appeal to the properties of atoms, their shapes and arrangement. Aristotle tries to steer a course between these opposing camps. The soul is the form of the body; the individual living thing is a single substance, which is what it is because it has a certain functional organization of its matter. Psychological hylomorphism, as Aristotle presented it, is a sophisticated and easily misunderstood notion of mind-body interaction. Strato tries, I believe, to develop a simpler theory by appealing to a somewhat more sophisticated understanding of physicalism than Democritus' reductive materialism. Mind and body interaction is unproblematic, because both are physical phenomena.

Strato inherits from Aristotle a picture of cognitive activity that is rigorously psycho-physical.¹ All cognitive activities except thinking are straightforwardly realizations of bodily states that are enformed in a particular way. Sight, for instance, is the realization of the visible form in the visual system of the body. The picture is somewhat more complicated in the case of thought because (according to Aristotle) thinking, unlike sight, does not have a specific organ. Despite this asymmetry, Aristotle emphasizes the similarities between thinking and perceiving and makes human thought dependent upon *phantasia*, an activity of the perceptive soul.² Aristotle's account of cognition would incline Strato toward physicalism, were he, unlike Aristotle, to balk at the complexities of psychological hylomorphism as applied to thinking.

Strato, as is well known, was referred to in antiquity as "the physicist." Diogenes Laertius mentions that he excelled as a natural scientist (1). Cicero grants his reputation as a natural scientist, while criticizing his apparent lack of interest in moral questions (8A–B). Aristotle remarks at the beginning of the *De Anima* that the study of the soul will contribute especially to the study of nature (402a5–7). In a similar spirit, Strato would have approached the study of cognition and psychology in general. As an accomplished natural scientist, he would undoubtedly have brought a physicalist bias to his work. Of the titles listed by Diogenes Laertius as extant, not one suggests the examination of the mind in its own right.

¹ For a fuller discussion of Aristotle's psycho-physicalism see Modrak (1987).

² In *De Anima* III.4, Aristotle mentions many similarities between thought and perception and at 429b10–14 entertains the proposition that the same faculty differently disposed perceives and thinks. Aristotle asserts that thought is dependent upon *phantasia* at *De An.* 431a17 and 432a3–6. See the discussion of the relation between the perceptual and noetic faculties in Modrak (1987) chs. 4–5.

Strato's interest seems to be primarily, perhaps exclusively, in the nature of cognitive function and cognitive objects.

Strato believed that the intellect (*dianoia*) and the senses were one (61). According to Sextus, he is one of the few philosophers who held this view. What does this position come down to for him? The identity in itself is open to various interpretations, both physicalist and dualist. However, a detail that Sextus adds suggests the embodiment of the capacity for thought as envisaged by Strato. We are told that the intellect peers out through the sense organs using them as peepholes. The senses are exercised through bodily organs. If the intellect just is the senses or at least is not distinct from them, then it, too, would be exercised through bodily organs. Support for this reading might also be found in Strato's claim in his treatise, *On Motion*, that the soul is changed in thinking in the same way as it is in perceiving (41). His argument in this case is that thinking just like seeing or hearing is an activity (*energeia*). In both cases, the cognizer is moved. One might argue against Strato's position on the grounds that an activity of the rational part of the soul is not the same sort of thing as an activity of the perceptual part. Perceptual activity clearly involves bodily movement. Arguably, rational activity might occur without any physical movement. But in this case, the onus would be on the objector to explain how psychic motion differs from physical movement. Strato, however, argues that since motions are causes, the changes involved when the soul thinks are dependent upon the changes occasioned by perception.³ "The soul cannot think of things that it has not previously seen, for example, places or harbors or pictures or statues or people or anything else of this sort" (41). If rational activity involves the same type of activity as perceiving, then it too would involve movement in a bodily substrate. If this is Strato's line, as seems likely, it would be in sharp contrast to Aristotle's claim that thinking does not have a bodily organ (*De An.* 429a24–25). This would not be particularly surprising, however, since we are frequently told in other contexts that Strato introduced new ideas (8A, 2). Strato's position is assimilated to that of Aristotle by Simplicius in the final line of the fragment; he sums up the view of "the best of the Peripatetics," as asserting that the soul is changed, even if the change is not bodily. But the line of argument developed by Strato runs counter to such reservations about psychophysicalism.⁴

³ In this gloss on 965.20–25, I am following Sharples' edition with respect to line 21 and reading *aitiai* instead of following Wehrli in adopting Poppelreuter's emendation, *hai autai*.

⁴ Further support for attributing the reservation to Simplicius can be drawn from the context of this fragment. Simplicius is explicitly offering an argument for his view that

Strato's argument for saying that the intellect is the same as the senses turns upon a causal account of thinking, according to which the information reaching the intellect comes through the senses. Without them, it would have no content and hence the activity of thinking is just an exercise of the same underlying cognitive ability as perception. That this is the correct way to construe Strato's assimilation of thinking to perceiving is clear from his placing all cognitive activity in the *hêgemonikon* (63A–B). Plutarch refers to an argument of Strato's that proves it is impossible to have perception in the absence of thought (62). If we are actively thinking about something else, we may not see what is in front of our eyes or hear sounds in our vicinity. In the course of presenting Strato's argument, Plutarch includes a line (attributable to Epicharmus) "*nous* sees and *nous* hears and the others are deaf and blind."⁵ Then Strato's argument continues with the claim that the experience of the eyes and the ears does not produce perception unless the power of thought (*to phronoun*) is present. This is an interesting argument for our purposes, because it is one that is compatible with either physicalism or dualism. The dualist picture would be that of an immaterial *nous* that transforms inert bodily organs, eyes and ears, into cognitive receptors. There is good reason, however, not to attribute this picture to Strato. Even though his argument is compatible with dualism; it is fully compatible with physicalism. Were a dualist, however, to embrace the argument, s/he would need to give an independent argument in favor of dualism to supplement Strato's discussion. By contrast, Strato offers no argument for a dualist conception of the mind. In addition, we know that he argued at length against Plato's arguments in the *Phaedo* for an immaterial, immortal soul (76–81).⁶

When Strato argues for attributing the same kind of activity and movement to the soul in thinking as in perceiving, he calls attention to the dependence of the intellect on the senses for its objects (41). Aristotle had entertained the proposition that thinking and perceiving were different exercises of the same faculty.

Since a magnitude and what it is to be a magnitude are different, also water and what it is to be water are different . . . one discerns what it is to be flesh and flesh either by means of a different faculty or the same faculty differently disposed. (*De An.* 429b10–14)

the soul does move but does not move with a corporeal motion (*In Aristotelis Physica* 6.4 234b10–20, CAG 964,23–965,21).

⁵ Whether or not Strato cited Epicharmus or Plutarch inserts the line is less important than that the sentiment expressed by Epicharmus coheres very well with Strato's position.

⁶ These will be discussed at greater length below.

Strato takes this possibility a step further. He not only believes that thinking and perceiving are exercises of the same faculty, but he makes them the same capacity (62). By pointing out that thought may interfere with sensing, Strato's goal is to show that apparently disparate activities of sensing are not independent activities of distinct bodily organs, eyes and ears, but involve a central capacity for cognition. The affected organ must be the subject of cognitive awareness in order for perceiving to take place; if the focus is elsewhere, no perception through the organ will occur.

For frequently we fail to notice letters when we traverse them with our sight and words that fall on our ears, because we have our mind on something else. . . . (62)

It is not enough to stimulate healthy eyes with visible materials in order to cause seeing; or healthy ears with audible sounds in order to cause hearing. Only when the cognitive focus is on the objects of sight or on the objects of hearing do we actually see and hear. The consequence of this insight is that one need not think in terms of different cognitive functions (thinking and perceiving) that must be assigned different mechanisms. Thought occurs in the same way, as does perception. This avoids any worries about whether thinking has a bodily organ. (Aristotle had argued that it did not have one.)

Strato's conception of cognitive unity might be seen as an expansion of Aristotle's discussion of cognitive interference in the *De Sensu*.

Hence when things are put before our eyes, we do not perceive them if we are deep in thought or are fearful or are hearing a loud sound. (447a15–17)

Strato differs from Aristotle, however, in his emphasis on thinking. For Aristotle, being lost in thought is just one cause among others for our failing to see what is before our eyes. For Strato, there is a deeper explanation than mere cognitive interference, which occurs when one cognitive activity interferes with another. On his theory, many cognitive capacities do not compete with each other for dominance. There is a single cognitive capacity for thinking (*noein*) that is exercised through a variety of bodily organs. Since it is a single capacity, it will have a single focus. While this focus might involve information received through several different organs at the same time, conscious awareness is an exercise of a single cognitive capacity. If this capacity is focused such that it is simply not being exercised through a particular sense organ at a particular time, that organ is without the capacity to sense at that moment. Further evidence for the unitary

conception of cognitive activity can be gleaned from Strato's explanation of dreaming (68). Aristotle had gone to some length to separate thinking that is embedded in a dream from the dream proper, which he assigned to the perceptual faculty (*De Ins.* 458b17–26). Strato invokes thought (*dianoia*) in his account of how dreams arise (68). Unlike Aristotle, he has no reason to distinguish between perceptual and rational elements in a dream.

With respect to bodily sensations, Strato makes a similar point about the unity of cognitive focus.

[I]t is not in our foot that we feel the pain when we stub our toe, nor in the head when we break it, nor in our finger when we cut it off. For the other [parts], apart from the *hêgemonikon*, are without sensation; it is when the blow is transmitted keenly to this that we call the sensation pain. . . . (63)

The bodily part is without sensation until the awareness of the wounded person is directed upon that part. Strato cites various behaviors to justify this claim, for instance, an injured person will deliberately try to keep the perceptual focus from the wound. Such observations lead Strato to conclude that all parts of the body except the *hêgemonikon*, the governing part of the soul, are without sensation (*anaisthêta*). In broad outline, this is an account that a dualist could accommodate with a supplemental argument. Strato's account of mind-body interaction, however, can be more easily integrated into a physicalist account of mind. A closer look at how Strato tells the story of the pain due to a wound should establish his physicalist leanings.

Unlike Epicurus who suggests that we focus our thoughts in a way that blocks the awareness of bodily pain, Strato envisages a case where we put pressure on a wound in order to block the transmission of information from the wounded part to the governing part of the soul. He compares the transmission of a blow from an extremity to the *hêgemonikon* to the transmission of sound from a distant sounding object to the ear. In both cases, once the sensation reaches the *hêgemonikon*, it refers the pain or the sound to its origin. His is a story about the physical transmission of a sensation through the body to the *hêgemonikon*. The ability of the body to provide the basis for a sensation of pain to the mind is not at issue. Strato speaks of the necessity of such bodily changes travelling from the site of the injury to the mind (*pros to phronoun*). His point is that the bodily changes that transmit information to the mind are not in themselves sufficient for an awareness of pain. The extremities of the body act as a medium for a transmission of information that is then interpreted by the governing part.

Just as the air serves as a medium for the transmission of sound from the source of a sound to the ear, so too the body serves as a medium until the sound reaches the innermost region of the governing part. This part possesses the capacity for recognition. Strato uses verbs for thinking (*noein*, *phronein*) that carry with them a connotation of being conscious of one's situation and surroundings. We can find the seeds of this picture in Aristotle's distinction between sound as the change caused by the compression of air due to a blow and sound as actually heard by a perceiver (*De An.* 425b27–426a2). Strato exploits this insight in order to construct a picture where the body acts as a medium for a centralized power of awareness or consciousness.

Strato uses examples to make his case.

. . . and if our limbs are held by bonds we press hard with [our] hands, obstructing the transmission of the affection and compressing the blow in the parts that are without sensation, so that it should not, by reaching the [part] that has intelligence (*to phronoun*), becomes pain. . . .⁷ (63B)

This passage describes a conscious effort to block the transmission of sensory input from one's bound arms by pressing one's hands together or against the object to which the arm is bound or clenching one's fists, depending upon which option is available. (It is not clear from the description exactly which picture Strato has in mind.) The consequence of adopting any of these strategies is the tensing of the muscles in the arms. The tensing will inhibit the transmission of the sensation of pain. These details leave little doubt that Strato envisages a physical process of pain transmission to a physical, sentient organ.

The fragments that we have simply do not provide an explanation of why Strato subtly shifted emphasis from Aristotle's faculties based approach to awareness to a highly centralized one. We might speculate that he was drawn to the centralized model because it affords a simpler and, in some respects, cleaner picture of consciousness. The integration of perceptual and intellectual capacities on his model is total and hence fully intelligible. Or, Strato may have been drawn to a centralized model of cognition for purely dialectical reasons. Dualism's strongest case, according to Aristotle, was its apparent success at handling such notions as choice and voluntary

⁷ As mentioned by Sharples (63B, n.2) there is a lacuna (line 24). I think Duebner's modest emendation of the text should be followed as indeed it was by Wehrli. Pohlenz' suggestion that more than *tais* has dropped out of the text because the argument makes no sense is wrong-headed. We can make perfect sense of the argument without further changes.

action (*De An.* 406b24–25). By showing that a centralized capacity for consciousness could be given on a materialist account of mind, Strato might have hoped to defeat the best argument for dualism.

Strato probably used the term (*hêgemonikon*) for a centralized governing part of the soul (**63A–B**).⁸ This term figured importantly in the Stoic account of mind. By using it, Strato emphasizes, not only the centrality of this faculty, but also its role in integrating and controlling all the various impulses reaching it from all over the body. He may have been inspired by Aristotle's notion of a controlling sense to go beyond the notion of a common sense that integrates all incoming sensory information to that of a governing part of the soul that is the seat of all cognitive functions. Aristotle develops his account of a controlling sense (*hêgemonikon*) to explain the phenomenon of dreaming (*De Ins.* 460b16–18; 461b25–27). We know that Strato, too, gave an account of dreaming (**1, 68**). Aristotle considers whether to assign dreaming to the faculty for thought or perception (*De Ins.* 458b2). Characteristically Strato combines these two in a single kind of cognitive activity that is constitutive of dreaming.

Strato says [that it is by] an irrational nature of the intellect (*dianoias*) that becomes in a way more perceptive in sleep and for this reason is affected by a cognitive power. (**68**; translation follows Sharples)

Dreams, according to Aristotle, have their origin in perceptual information that we receive when we are awake but do not attend to while awake. Later in the quiet of the night this peripheral sensory material bubbles up to become the object of our attention because the controlling sense has shut down for the night.⁹ When discussing visual illusion as an analogue to dreaming, Aristotle explains,

The reason this happens is that the controlling sense does not judge these things by the same faculty as that by which the images occur. A sign of this is that the sun appears to be a foot across but something else contradicts the image. (*De Ins.* 460b17–20)

This explanation, which also occurs in the *De Anima* without a reference to a controlling sense (428b4–5), lends itself to a line of thought that could easily be transformed into a more comprehensive notion of a

⁸ Below I will discuss why some commentators, including Wehrli, have doubted that Strato used the term *hêgemonikon*.

⁹ Plato also suggests that dreams are produced in the sleeper by sensory motions that remain from the day (*Tim.* 46A). Upon awaking, the dreamer often recognizes the things in the world that were presented in imagery.

controlling cognitive faculty. Having made perception an exercise of the same faculty as thought, Strato has every reason to extend the Aristotelian picture of a unified sensory faculty to include all cognitive activity. His picture is one in which the intellect (*dianoia*) as the controlling faculty possesses the capacity for perception and quasi-perceptual experiences such as dreaming as well as the capacity for discrimination. Moreover, the Aristotelian insight that in the case of illusions our beliefs may override the information that our senses seem to provide may very well encourage Strato to adopt the notion of a centralized, controlling cognitive faculty.¹⁰ The term, *hêgemonikon*, fits the role assigned this faculty. There is simply too much information being received all the time and something must account for the coherence of the picture of the world and ourselves that constitutes consciousness. A controlling faculty is just what is required.

Strato attributes this capacity to the *hêgemonikon* (63A–B). Wehrli (among others) doubts that Strato uses the word *hêgemonikon* for the centralized cognitive faculty (comm. on his fragments 110–11 = 63A–B). Apart from the dominant role the term played in Stoic discussions, the major reason for questioning its use by Strato is the view that his notion of a unitary soul makes an appeal to a controlling faculty unnecessary. But as I have argued, positing a unitary mind does not eliminate the challenge facing that mind in integrating and responding to all the stimulation that reaches it. Since *hêgemonikon* occurs in several fragments and fits his account well, I see no reason to question his use of it.¹¹

Strato places the *hêgemonikon* in the head between the eyebrows (57–58, 66). As evidence for this location, Strato notes our tendency to bring our eyebrows together when we experience pain (63B). It is hard to discern from the evidence available to us why Strato assigned the centralized cognitive faculty this location. Perhaps, he was influenced by such considerations as the simultaneous visual perception through each eye, or the apparently simultaneous perception of sound through both ears, or odor through both nostrils. In all these cases, two streams of bodily transmission feed into the cognitive faculty and yield a single perception. In order to explain this process on a theory where bodily changes travel from the organ to the site of awareness, Strato would be inclined to situate the *hêgemonikon* equidistant from each eye or ear or nostril. He may, also, have been influenced by the way in which stress and mental concentration are manifested in this area of our face and head. In short, the seat of consciousness should be centrally located in order to explain various observations

¹⁰ Cf. Aristotle, *De Anima* 428b4–5 and *De Insomniis* 460b17–20.

¹¹ Cf. Long and Sedley (1987), vol. 2, p. 313, n.5.

about the transmission of sensory information and to explain observable responses to certain psychological states. In light of the dominance of the senses located in the head, Strato may have chosen the head over the other leading contender, the heart. The heart is also centrally located but it seems less well situated to explain certain perceptual phenomena. Although the heart, too, responds to psychic stresses of various sorts, Strato believes that the front, top portion of the head more clearly responds. Here, too, we find Strato striking off in a different direction than Aristotle. The latter places the central sense faculty in the heart and, while denying that thought has a special organ, he makes thinking dependent upon images (*De Part. An.* 666a6–18; cf. 648a2–4, 650b19–23, 656b3–7; *De An.* 431a17, 432a3–6). These would be found in the heart, so there is a sense in which all cognitive activity for Aristotle is located in or around the heart.

Strato gives a straightforwardly physical account of the changes that the external medium undergoes in the transmission of color and sound (64–5). His concern would seem to be to avoid any suggestion that the medium might experience the sensible form or exhibit it in the way that the external object of perception does. This, too, answers a worry, which is voiced by Aristotle, when he asks rhetorically — why does the air not perceive the smell it transmits from the source of the smell to the nose (*De An.* 424b14–19)? According to Strato, there are certain physical changes that occur outside the percipient's body, for instance, the striking together of two objects, that causes a change in the air between the percipient and the source of the sound. The parameters of the movement of the air determine which changes take place in the ears of the percipient and these changes are, in turn, transmitted from the ears to the unitary faculty of cognition. At this point, if the percipient's attention is directed towards these changes, s/he hears a sound. The sound has the characteristics it has (e.g. being a high pitched ringing sound) because the movement conveyed to the perceiver's body had the characteristics it had. Strato draws a distinction between what happens in the medium and what happens at the point of awareness, but there is (on his account) no principled distinction between what happens outside the body and inside it up to the point of awareness. Nor, is there any reason to suppose that the point of awareness is somehow situated in an immaterial mind.

It is clear from the extant fragments that Strato presented a detailed account of cognitive functions and made them all functions of a central cognitive power. The same faculty is responsible for perception and for thought. It is also responsible for the perception of pain and for dreaming. Cognitive interference, *inter alia*, is easily explained on this model of

cognitive activity. The account appears to have been powerful and unified. The way Strato develops the arguments for his analyses of specific cognitive phenomena, for instance, the awareness of pain, displays a physicalist bias. Plutarch confirms that Strato held views opposite to Plato's about mind and soul (20).

In addition, the only evidence we have that Strato had any interest in dualistic theories of mind comes from his commentary on Plato's *Phaedo*. His desire to defend a physicalist theory of mind gave him a motivation for examining Plato's *Phaedo* with a critical eye. The *Phaedo* presents a series of arguments designed to show that the soul exists before embodiment and is not itself subject to death or destruction. Strato systematically examines Plato's arguments; he looks critically at the argument from opposites (76), the argument from recollection (77–78), and the argument against identifying the soul with an attunement (79). He challenges the argument from opposites (69E6–72E2) on the commonsense grounds that, contrary to Plato's position, the living do not come from things that have perished; a severed finger, for instance, does not engender a living finger (76). Moreover, even when they appear to, it is specific, not numerical, identity that is involved. He objects to Plato's grounds for rejecting the view that the soul is an attunement because attunements but not souls admit of variation (93B); Strato points out that just as one harmony is sharper or flatter than another so, too, one soul is sharper or duller than another (79).

Crucially, Strato raises a series of objections to Plato's final argument for the imperishability of the soul (102A10–107A1) (80–81). He argues that Plato's line of reasoning — according to which the soul does not admit death — would have the consequence that the souls of irrational animals and plants would be immortal. He generalizes this conclusion to argue that anything that is in the process of becoming would be imperishable. Death, Strato concludes, is the loss of life; it is not the receiving of death (81). Strato's objections to Plato's arguments for immortality and imperishability were very perceptive; they were later taken very seriously by Neoplatonist commentators. Damascius is the source of Strato's arguments to which he responds — to his own satisfaction; he also mentions Proculus' responses. For our purposes, these objections provide further evidence of Strato's commitment to physicalism. As has been noted, a dualist could accept many of Strato's claims about cognition, although not some of his reasons for these claims, but a dualist, unlike a physicalist, would need to supplement the account of cognition with a defense of dualism. Plato in the *Phaedo* brilliantly argues for dualism. Strato as a physicalist would quite reasonably want to focus his dialectical skills on these arguments in order

to undermine them. He is determined to establish the severity of the problems internal to the rival Platonic theory of mind. Saying this is completely compatible (contrary to what some have argued) with the recognition that Strato's approach is dialectical.¹²

Strato criticized the doctrine of recollection that is advanced in the *Phaedo* as evidence for the preexistence of the soul (73C–76A). According to Plato, learning is recollection; it is the recovery of concepts already present in the mind.

Our sense perceptions must surely make us realize that all that we perceive through them is striving to reach that which is Equal but falls short of it. . . . Then before we began to see or hear or otherwise perceive, we must have possessed knowledge of the Equal itself if we were about to refer our sense perceptions of equal objects to it, and realized that all of them were eager to be like it, but were inferior. (*Phaedo* 75B; Grube trans.)

Strato points out that since proof is required for knowledge, proof would seem to be sufficient for knowledge. Were recollection sufficient, proof would be unnecessary (**77A–B**). The claim that the soul acquires knowledge prior to embodiment, he argues, must, in addition, be unpacked in terms of a notion of time. Either the soul acquired knowledge before time exists, in which case it has always known and has no need of recollection; or it acquired knowledge after time comes into existence, in which case the soul acquired knowledge by learning (**78**). The acquisition of a skill, such as flute or harp playing, requires practice. If the doctrine of recollection were correct, one should be able, or so Strato reasons, to play an instrument without ever learning how to play it (**77A**). These objections to Plato's account of recollection emphasize the processes by which knowledge and art are acquired. They provide further evidence of a conception of cognition as realized in real time in familiar activities involving both mind and body.

Since thinking and perceiving are exercises of the same cognitive capacity, Strato has little motivation for a separate discussion of the mechanisms underlying thought. He is, however, motivated to enter the fray about the nature of meaning (**60**). The Stoics famously posit an intentional object, the *lekton*, to explain meaning.

¹² However, the recognition of the dialectical character of Strato's criticisms provides us with a good reason not to attribute Platonic or Neoplatonic positions to Strato on the basis of his critique of the *Phaedo*. Cf. Repicci this volume, and Sharples notes on the text of **80–81**.

The Stoics championed the first opinion, saying that three things are linked together, what is signified (*to sêmainomenon*), what signifies (*to sêmainon*), and the object (*to tunchanon*). What signifies is an utterance, for instance Dion; what is signified is the thing itself which is indicated by this and which we grasp as it subsists in accordance with our thought . . . the object is the thing that exists externally, for instance, Dion himself. (Sextus, *M.* 8.11–12; translation follows Sharples)

The signification or meaning is an internal representation, a sayable (*lekton*); it mediates the relation between the word and its external referent. This distinctively Stoic theory is similar to the position Aristotle takes in *De Interpretatione* 1. According to Aristotle, there are three items of note, the word, the psychological state that the word signifies and the object in the world to which the word refers.¹³ Strato, by contrast, rejects any sort of internal, noncorporeal object as the vehicle of meaning. For him as for Epicurus, there are only two things involved, the word (the signifier) and its referent (60). Both are physical entities. It is not surprising that Strato would take this position because, on his account of cognition, the way the spoken word affects the intellect would be through a series of bodily changes. When these changes reach the centralized cognitive faculty, it apprehends the word in relation to its referent. There is no room on his picture of mental activity for an intentional object that the mind stands in relation to; mental activity just is the apprehension of the spoken or written word through a series of physical changes in the body that reach the central cognitive faculty. We might think that Strato's emphasis on the unitary and unique character of mental activity would give him a way to countenance meanings as intentional objects. It is instructive to note, however, that for him keeping the mind from focusing on a pain is, in large measure, a matter of keeping the impulses from the wounded site from reaching the mind (63B). A mental state for Strato just is the end stage of a physical process that reaches the *hêgemonikon*, the central cognitive faculty located between the eyebrows. What makes the state mental is the cognitive awareness that accompanies the end stage. Introducing an incorporeal, intentional object at this point would have struck Strato as both unnecessary and inexplicable. The ontological status of such an object is problematic. A single explanatory model applies to bodies of all sorts and physical processes, but incorporeals are a different matter. More importantly, the causal story that Strato offers for cognitive activity is in terms of physical processes. In order

¹³ For a detailed analysis of Aristotle's account of meaning and reference, see Modrak 2001.

for a physical process to terminate in thinking, the bearer of meaning must be such that it can impact the body. For this reason, Strato, unlike the Stoics, admits only the spoken word and its external referent. The spoken or written word fits his causal model; an intentional object does not.

The Stoics appeal to their notion of *lekta* to formulate a comprehensive account of truth. It is a theory of truth that is fully adequate for their propositional logic.¹⁴ Strato's interests lay with physical theory and its implications for a variety of phenomena, including psychological ones. He apparently had little to say about truth. Sextus seems to indicate as much by seeming to deduce from Strato's account of meaning his position with respect to truth (60). In light of his account of meaning, Strato would be left with little choice but to make the spoken word the vehicle of truth. From an epistemological/logical standpoint, there are definite drawbacks to making the spoken sentence the bearer of truth. But we have little reason to think that Strato had these concerns or addressed them.

To sum up, a careful examination of Strato's statements about cognitive activity, about the bodily site of this activity, about thought and intentionality and about the difficulties inherent in dualism has revealed a comprehensive and novel conception of the mind and its relation to the body. Despite the fragmentary state of our evidence, there is good reason to see Strato as a thoroughgoing physicalist who sidesteps some of the complications of Aristotle's analysis of thought, while remaining true to Aristotelian psychophysicalism. Strato recognizes that the internal coherence of consciousness requires a single perspective that must arise at a single site in the body. He argues for this picture on the basis of common observations of our experience of bodily sensations, perceptions and thought. His unitary, physicalist account of cognitive function is simple and comprehensive; it provides a remarkably adequate explanation of cognitive activity.

¹⁴ For further discussion of the Stoics conception of intentionality, meaning and truth, see Brittain 2005, Ierodiakonou 2006, Long 2005, and Modrak 2006.

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Theophrastus and Strato on Animal Intelligence

for Richard Sorabji

William W. Fortenbaugh

I

In her paper “Physicalism in Strato’s Psychology,”¹ Deborah Modrak argues persuasively that in matters of psychology Strato was no dualist. Rather, he was a thoroughgoing physicalist, who held that the intellect and the senses constitute a single capacity that is located in the head between the eyebrows. That is a significant departure from Aristotle, who makes the heart the center of psychic activity and draws a clear distinction between the intellect and the senses. The former is not embodied, but the latter are. Moreover, Aristotle withholds intellect from animals: they are characterized by sense perception and nutritive capacity. Human beings with their ability to think are placed atop the *scala naturae*; animals are below, being superior to plants. In contrast, Strato is reported to have assigned intellect to all animals. That is of considerable interest, for animal behavior was frequently discussed in the early Peripatos, and on occasion this discussion appears to question the neat divisions of the *scala naturae*. In this regard, Books 8 and 9 of the Aristotelian *History of Animals* are often cited.

¹ Chapter 11 in this volume.

For there we read that most animals possess traces of those psychic characteristics, which are more clearly differentiated in human beings: tameness, wildness, gentleness, roughness, courage, cowardice, fright, boldness, rage, mischievousness and resemblances of intelligent thought (8.1 588a18–24). And again, we are told that in the case of long-lived animals we observe a certain psychic capacity regarding each of the affections of the soul: intelligence, foolishness, courage, cowardice, gentleness, roughness and other such dispositions (9.1 608a14–17). In addition, certain animals are said to have a share in learning and teaching (9.1 608a17–19), and in some cases they act with a view to the future: at least, wild birds are said to build their nests with a view to their mode of life and for the safety of their offspring (9.11 614b31–32). Such passages may be said to encourage the humanization of animals, but it would be wrong to say that Aristotle intends to credit animals with human intelligence, for he speaks of resemblances (8.1 588a24), uses a qualifier like “as if” (9.48 631a20, 27) and introduces analogy, when drawing a distinction between the art, wisdom and understanding that humans exhibit and the natural capacity that animals possess (588a28–31). In relation to human intellect, animal capacity is not merely less or weaker. Rather, it is different in kind and therefore spoken of as analogous.²

A stronger challenge to the *scala naturae* appears to have been put forward by Theophrastus, who was Aristotle’s successor and Strato’s predecessor as head of the Peripatetic School. He wrote a work *On the Intelligence and Habits of Living Creatures* and in that work or elsewhere — most likely in *On Piety* — said that the souls of men and animals are not naturally different.³ In particular, they are not different in their desires and angry impulses,

² See Balme p. 59 notes b and c.

³ White pp. 216, 226, 236 suggests and seems to believe that the work *On the Intelligence and Habits of Living Creatures* (Diogenes Laertius, *Lives* 5.49 = fr. 350 no. 11 FHS&G) should be attributed to Eudemos. In his collection of Eudemian fragments, Wehrli (1969b) 51–53 lists eight (frr. 125–32) under the label “Tiergeschichten?” These fragments are of interest in regard to the psychic capacities of animals, but that hardly justifies attributing to Eudemos a work that is included in Diogenes Laertius’ catalogue of Theophrastean works (5.49 = 350 no. 11 FHS&G). To be sure, the work in question is included in the third of the five lists that make up the catalogue (5.48–50 = 1.243–69 FHS&G), and the third list may contain a work of Eudemos: namely *Geometrical Researches*. But the third list also mentions works that are almost certainly Theophrastean: e.g., *Exhortation* and *On Slander* (fr. 436 no. 33 and 666 no. 13; both are duplicates; see my forthcoming *Commentary* 6a on the ethical fragments of Theophrastus). I agree with Wehrli (1969) 112 and (1968) col. 657, who does not assign *On the Intelligence and Habits of Living Creatures* to Eudemos and proposes other possibilities regarding the Eudemian fragments. Be that as it may, I have chosen to pass over Eudemos because I am in agreement with White that the surviving fragments of Eudemos

and further in their calculations and sensations. Against this background, the idea that Strato assigned intellect to animals may seem of little moment. Strato would be a mere follower who did little more than develop an existing strand in the work of his immediate predecessor.⁴ Such a view, albeit attractive, seems to me unfair to Strato, for it fails to take account of his particular contribution to the discussion of animal intelligence. I want, therefore, to look at several relevant fragments of Theophrastus, after which I shall turn to Strato, whose position on animal intelligence follows at least as much from his own physicalist's view of intellect and sense perception as from earlier discussion within the Peripatos.

II

Regarding animals, the best-known Theophrastean fragment is found in Porphyry's work *On Abstinence from Eating Animals*. The work is addressed to Firmus Castricius, who had been a vegetarian but had lapsed and begun to eat meat. Porphyry's aim is to persuade him to return to a diet that does not include meat. The text that interests us occurs in the third of four books. In the books that precede, Porphyry has argued that eating meat contributes neither to temperance nor to piety, which are important for leading a contemplative life. In the third book, he turns to justice. He agrees with the Stoics that justice should be extended to similar creatures, but he rejects their claim that justice extends only to human beings, for animals have soul and every soul is rational in that it has perception and memory (3.1.4). It follows that animals are like human beings in their psychic makeup and therefore ought to be treated with justice. Porphyry develops this theme at length. Drawing on the *History of Animals*, he treats Aristotle as an ally without acknowledging that the Peripatetic expresses himself with caution and qualification, and in other works recognizes a fundamental difference between animals and humans. Ignoring this side of Aristotle is intelligible, given Porphyry's desire to persuade Castricius that eating meat is wrong, but it also tells us that Porphyry is not an altogether objective reporter. If it

suggest that he remained an Aristotelian who viewed animal behavior as frequently analogous to human behavior. —I also pass over Clearchus, whose fragments concerning animal behavior are few and offer little in regard to the intelligence of animals. We read that the out-lying fish guards itself against birds and that the octopus is very stupid (fr. 101 and 102 Wehrli), but it would be reckless to generalize on the basis of these two texts. Concerning the octopus, see below section II, on Theophrastus fr. 365D FHS&G.

⁴ In writing "mere" follower, I may be exaggerating, but for Strato following Theophrastus, see, e.g., the excellent dissertation of Berryman (1996) 243, 267.

serves his interests, he is prepared to present a misleading, not to say outright false picture of a leading Peripatetic philosopher.

Turning now to Theophrastus, we can say that Porphyry treats him too as an ally. In particular, we are told that Theophrastus recognized a kinship between humans and animals. The idea is developed in some detail. We are first told that a natural relationship exists between parents and children and between all men who have the same forefathers. Furthermore, citizens are related in virtue of sharing the same land and through interaction. Similarly, there exists a kinship between all men, for they share the same food and habits and are all members of the human race. Still further, kinship extends to animals, for like human beings they are marked by skin and flesh and fluids. In addition, their souls are not naturally different. All share in desires, angry impulses, calculations, ἐπιθυμῖαι, ὀργαί, λογισμοί, and above all in sense-perceptions, αἰσθήσεις. There are, of course, differences in degree, but that does not negate the fact that all have the same psychic faculties. The relationship of emotions makes that clear: δηλοῖ δὲ ἡ τῶν παθῶν οἰκειότης (3.251–53 = Theophrastus fr. 531 FHS&G).

Kinship, οἰκειότης, as conceived of by Theophrastus is not to be confused with the Stoic doctrine of *oikeiosis*, οἰκείωσις. The latter is a developmental theory that begins with a child's instinct for self-preservation. This instinct is transformed over time and becomes the source of community and justice among human beings. It is never extended to include animals. In contrast, the former, i.e., kinship is an objective claim based on shared characteristics. It is of interest to Porphyry, because he wants to establish a natural relationship between human beings and animals. In particular, he wants to establish that humans and animals have the same psychic faculties and therefore ought to be treated justly in much the same way that humans treat each other.

For our purposes, the important point is that Theophrastus is said to have extended cognitive activity to animals. We read that the souls of animals and humans are not naturally different: ἀδιαφόρους πεφυκέναι. Animals are even said to have a share in calculation. To be sure, there are differences in degree, but difference in degree presupposes possessing the same faculties. Hence, Theophrastus can say, “and yet for all of them the principles are naturally the same,” πᾶσί γε μὴν αὐτοῖς αἱ αὐταὶ πεφύκασιν ἀρχαί. All this seems straightforward. Theophrastus rejected the Aristotelian *scala naturae*, attributed not only emotions to animals but also calculation and in doing so anticipated Strato. We should, however, keep in mind

that Porphyry is prepared to present material in ways that serve his own interests⁵ and that there are other texts that encourage caution.

I am thinking of two fragments from opuscula that are largely lost. One is preserved by Photius and comes from *On Creatures Said to be Grudging*. The fragment divides into two parts. In the first, Theophrastus reports what men say about the gecko and other animals: namely that they begrudge men a benefit. E.g., the gecko swallows its skin when it sheds it, because it is a remedy for epilepsy. In the second part, Theophrastus offers a correction. It is clear, we are told, that the gecko and other animals do not withhold benefits because they are grudging (on account of envy, διὰ φθόνου), but because of some natural affection (φυσικὸν τι πάθος). Theophrastus does not spell out what he means by a natural affection, but he is clear that animals are irrational (ἄλογα) and incapable of the knowledge that stands behind the grudging behavior of human beings (*Library* 278 528a40–b27 = 362A FHS&G).

The second fragment is preserved by Plutarch and taken from *On Creatures that Change Color*.⁶ First we are told that the chamaeleon changes color not by any design, nor concealing itself, but from fear and to no purpose, being naturally frightened by noise. After that we read that when the octopus changes color, that change is an action and not something that happens to the octopus. It occurs as a result of forethought and with design. It enables the octopus to hide from the creatures it fears and to capture the creatures on which it feeds (27 978E–F = 365D FHS&G). Here we seem to have Theophrastus distinguishing between two animals, one of which changes color to no purpose and another that changes color deliberately, i.e., with forethought and calculation. But the matter is not so simple, for context suggests a different way to construe the Plutarchan passage. Phaedimus is being made to argue that sea animals are cleverer than those on the land. Toward this end, Phaedimus reports accurately what Theophrastus said about the chamaeleon (a land animal) and then enhances the report concerning the octopus (a sea animal). I.e., he upgrades the capacity of the

⁵ The same is true of Theophrastus: he is prepared to speak in ways that suit his interests. A minor but telling case is found in book 2, where Porphyry reports Theophrastus' reply to those who object to sacrificing the fruits of plants. The reply is that we do not take fruits from plants against their will (παρὰ ἀκόντων 2.13.1 = 584A.118 FHS&G). That suggests that plants have wishes in the way that human beings do, but Theophrastus does not believe that. Rather, he chooses to express himself in a way that will catch the reader's attention and add punch to his argument in favor of vegetable and against animal sacrifice.

⁶ The title is not given in the fragment under consideration (365D FHS&G), but it is given in two parallel texts (365A and B).

octopus in order to agree with the position that he is made to advance.⁷ I am not suggesting that Theophrastus would deny that change of color does facilitate the survival of the octopus. I am only saying the passage from Plutarch is not conclusive proof that Theophrastus assigned calculation to some but not all animals.

More could be said about the gecko, chamaeleon and octopus,⁸ but I end my remarks on Theophrastus by calling attention to the dolphin. According to Pliny the Elder, the historian Hegesidemus told the story of a boy at Iasus, who was riding across the sea on the back of a dolphin, when a storm arose and the boy drowned. The dolphin carried the body back to land, where the dolphin, admitting responsibility for the death, beached itself and expired. Theophrastus is said to have recorded that the same thing happened at Naupactus (*Natural History* 9.27–28 = 568A FHS&G). Aulus Gellius tells us that Theophrastus reported the amorous behavior of dolphins at Naupactus. Gellius adds that the dolphins experienced a burning desire for handsome boys and did so in a marvelous and human manner (*Attic Nights* 6.8.1–3 = 568B FHS&G). The reports concerning Theophrastus are brief and therefore tantalizing. Perhaps we should take a cue from Gellius and say that Theophrastus described the behavior in human terms. That seems to me reasonable, especially if we think that the source of the two reports is Theophrastus' (*Dialogue*) *concerning Love* (fr. 436 no. 29). For that work was most likely exoteric, i.e., a popular work intended for a wide audience. In such a work, describing the behavior of dolphins as marvelous and human would not be out of place. But that does not tell us whether Theophrastus believed that the perceptions and affections of dolphins are human in that they involve thoughts concerning responsibility and just response.⁹ In this regard, it is of interest that in the *History of Animals*, Aristotle expresses himself with considerable caution when describing the behavior of dolphins. He speaks of two mature dolphins supporting the corpse of a dead baby dolphin as though out of pity, οἷον κατελεοῦντες (9.48 631a20). And he speaks of a puzzle why dolphins beach themselves and adds that they are said to do this occasionally at random times for no reason, ἐνίοτε ὅταν τύχῃσι δι' οὐδεμίαν

⁷ Wimmer cuts off the Theophrastean fragment at the conclusion of the remarks concerning the chamaeleon (fr. 189).

⁸ For further discussion of grudging behavior and change of color on the part of animals, see *Quellen* (1984) 159–61, 282–83 and Sharples (1995) 72–84, 90–98.

⁹ In adding “just response,” I am influenced by Plutarch's parallel, in which the dolphin is said to have deemed it just, δικαίῳσας, to share in the death for which it is responsible (*Whether Land or Sea Animals are Cleverer* 36 984F). I should underline that Plutarch does not refer to either Theophrastus or Naupactus. He does mention Iasus but cites no source.

αἰτίαν (631b2–4). My guess is that if Theophrastus discussed dolphins in a scientific work, he will have expressed himself with equal caution. Put more generally, my guess is that in his esoteric works, i.e., his school treatises, Theophrastus remained an Aristotelian. He did not anticipate Strato in attributing intelligence to animals.

III

The fragments of Strato are not numerous, but in regard to animal intelligence, they present a coherent picture. I begin with a report found in Epiphanius' work *On Faith*. There we are told that according to Strato every animal is capable of receiving intellect: πᾶν ζῷον ἔλεγεν (sc. Στράτων)¹⁰ νοῦ δεκτικὸν εἶναι (*On Faith* 9.37 = 47). At first reading, this text might be thought clear and decisive in regard to Strato. He attributed intellect to all animals, and in doing so he went beyond Theophrastus and made a clean break with Aristotle and his *scala naturae*. But there are two problems. The first is more apparent than real. If we construe the word δεκτικὸν, "fit to receive" or "capable of receiving," in such a way that the emphasis is placed on capability and not on receiving, then the report would seem to make room for animals that have not in fact acquired intellect. They may be capable of receiving it, but for one reason or another they do not have it. There would then be some animals that do not violate the Aristotelian *scala naturae* and others (presumably most) that do in that they have intellect. Such an interpretation is more clever than convincing. Almost certainly we should put the emphasis on receiving, and if we need to explain why Strato may have used the adjective δεκτικὸν, a simple answer is at hand. He recognized that acquiring intellect is not accomplished in an instant. As with sense perception, acquisition occurs over time along with physical development. Many animals cannot see straightway at birth (their eyes are closed), and many animals cannot make complicated choices until they have grown and gained experience. Moreover, the other fragments that relate to sense perception leave little or no doubt that for Strato sense perception requires intellect. But before turning to the other fragments, a second problem needs to be acknowledged.

The second problem is not about the meaning of the Greek words but about the reliability of the author. Epiphanius is known to make egregious

¹⁰ Στράτων is supplied from what precedes: Strato, we are told, said that the hot nature is the cause of everything and that the parts of the cosmos are unlimited. In the Basil edition of Epiphanius, the name of Strato appears as Στρατωνίων. The corruption is not reason to doubt the reference to Strato. Indeed, the name is followed by ἐκ Λαμψάκου.

errors, so that Bob Sharples speaks of “a deservedly appalling reputation as a source”¹¹ and Ian Kidd, who is gentler but no less clear, writes, “in general the comments of the bishop of Salamis do not inspire confidence.” As an example, Kidd notes that Epiphanius attributes to the Stoic Chrysippus the view that the goal of life is having pleasant emotions.¹² That is well off the mark and certainly grounds for pause when dealing with a report by Epiphanius, but it does not prove that all his comments are erroneous. And in regard to the fragment in question (47), it seems best to withhold judgment until we have considered all the evidence relating to sense perception and intellect.

Among the fragments of Strato that relate to sense perception, best known is the report of Sextus Empiricus according to which Strato identified thought with the senses: αὐτὴν (sc. διάνοιαν) εἶναι τὰς αἰσθήσεις, and spoke of it peering through the sense organs as through windows: καθάπερ διὰ τινων ὀπῶν τῶν αἰσθητηρίων προκύπτουσιν (*Adversus mathematicos* 7.350 = 61). The image of windows or peep-holes may strike one as overly simplistic and even childish, but for our purposes that matters little. Important is that Strato not only regarded the intellect and the senses as one and the same¹³ but also conceived of the intellect as functioning with and through the organs of sense. Indeed, for Strato thinking is like sensing in that both involve motion, κίνησις. As Simplicius tells us, Strato held that the man who thinks (ὁ νοῶν) is always moved just as is the man who sees or hears or smells (*On Aristotle's Physics*, CAG vol. 9 p. 695 = 41). In regard to the humanization of animals, that is important. For the surviving evidence suggests that Theophrastus “tried to have it both ways.” On the one hand, he maintained Aristotle's conception of an intellect that is separate from the body and indestructible, i.e. a νοῦς that is χωριστός and ἄφθαρτος (Themistius, *On Aristotle's On the Soul* 3.5 430a10–25 [CAG vol. 5.3 p. 108.18–109.1 Heinze] = fr. 320A FHS&G).¹⁴ On the other, he

¹¹ Sharples (1998) 104–5 citing Kidd (next note); cf. (1995) 40 n.129 and (1996) 110, where Sharples calls Epiphanius “notoriously inaccurate” and cites *Against Heresies* 3.2.9, in which Posidonius is quoted as saying that the greatest good among human beings is wealth and health. See also Huby (1999) 20.

¹² Kidd (1988–89) vol. 2.ii p. 642.

¹³ Berryman, who resists identifying intellect and the senses, translates Sextus' words αὐτὴν (sc. διάνοιαν) εἶναι τὰς αἰσθήσεις in two different ways. On page 269 where she is challenging the identification, she translates: “mind is part of the senses.” But on page 42 where she is presenting the fragments of Strato apart from interpretation, she translates: “mind is the senses.” I much prefer the latter.

¹⁴ Cf. Priscian of Lydia, *Paraphrase of Theophrastus' Discourse On the Soul* 2.8–9 (Suppl. Arist. vol. 1.2 p. 30.22–31.2 Bywater) = fr. 312 FHS&G.

was prepared to attribute, at least on occasion, calculation and emotions to animals (fr. 531 FHS&G). By abandoning Aristotle's intellect in favor of a physicalist theory, Strato could attribute thought to all animals without the baggage of a separate νοῦς.

Still another fragment relating to sense perception is found in Plutarch's *Whether Land or Sea Animals are Cleverer*. We are told that according to Strato sense perception does not occur without the active involvement of intellect: οὐδ' αἰσθάνεσθαι τὸ παράπαν ἄνευ τοῦ νοεῖν ὑπάρχει. By way of illustration, Strato is said to have referred to words, both written and spoken, that pass unnoticed when our intellect is directed elsewhere: πρὸς ἑτέροις τὸν νοῦν ἔχοντας (3 961A = 62). As Modrak makes clear in her paper, unless the mind is focused on the stimuli (here, visual or audible words) no perception occurs.¹⁵ One might object that the example is not altogether apt. For the particular issue before us is animal intelligence, but the example offered by Strato concerns human beings. The pronoun ἡμᾶς, "us," occurs (it is found in the phrase λόγοι . . . διαλανθάνουσιν ἡμᾶς, which can be translated "words escape our attention"), and the objects that escape our notice are peculiarly human: letters and spoken words. The objection is not altogether foolish: letters and words are peculiarly human. But failure to perceive through lack of attention, whatever the particular cause, can also be observed in animals. And here, too, the failure may be attributable to a distracted intellect — at least, that seems to be what Strato thinks.

What follows in Plutarch is an example concerning the Spartan King Cleomenes III, after which Plutarch concludes with the following if-then hypothetical: "it is necessary that in all creatures that are perceiving thinking is also occurring, if by nature we perceive through thinking" (3 961B). On chronological grounds, we can say that the example of Cleomenes III (King of Sparta from 236 to 222 B.C.) is not taken from Strato (died c. 268 B.C.), but the concluding hypothetical, even though it is attributable to Plutarch, may be said to represent the thinking of Strato. Only it would be a mistake to construe the protasis as introducing doubt, at least in the case of Strato. For in what precedes we have been told emphatically that for Strato perceiving does not occur at all (οὐδ' . . . τὸ παράπαν) in the absence of intellect.

Another fragment — for our purposes the most interesting — comes from pseudo-Plutarch's work *On Desire and Grief* 4 = 63B. We read that Strato assigned all πάθη to the soul, not just emotions like fear and envy but also the pains that arise from blows to the body. For when we stub our

¹⁵ Cf. Sorabji (1993) 46, 79.

toe or hit our head or cut our finger, the blow is straightway transmitted to the governing power of the soul, the ἡγεμονικόν, which is situated in the head in the region of the eyebrows.¹⁶ Yet the pain is felt elsewhere: namely, in the affected extremity, which by itself cannot experience sensation. And it is much the same with sound. The ears are affected and motion passes from the ears to the governing power, at which point hearing occurs. But in this case, the sound is perceived as external and at a distance. As Strato puts it, we think that the sound is outside (our body) by adding calculation to the sensation: τὴν φωνὴν . . . ἔξω δοκοῦμεν εἶναι . . . αἰσθήσει προσλογιζόμενοι. In other words, the governing power not only receives the motions that come through the sense organs but also determines the source of the motions and hence of the origin of the sensation.¹⁷ Animals as well as men exhibit this capacity. They add a calculation of distance to the simple reception of stimuli, so that they too must be endowed with a measure of logos or intellect.¹⁸

That is not the usual grounds for assigning intellect to animals. It is not that they exhibit an ability to think ahead and to work out problems: e.g., wild birds that build nests with a view to the safety of their off spring,¹⁹ or the oft cited hunting dog that is following the scent of a hare, comes to a cross roads, sniffs out two possibilities, and not detecting the scent goes

¹⁶ Pseudo-Plutarch, *Opinions of the Philosophers* 4.5.2 = **57** and Theodoretus, *Remedy for Greek Attitudes* 5.22 = app. **57** tell us that Strato located the controlling power ἐν μεσοφρύφω, “in the middle-brow.” Tertullian, *On the Soul* 15 = **58**. says in *superciliorum meditullio*, “in the middle of the eyebrows.” Hence, when we stub our toe or hit our head, we straightway contract our eyebrows.

¹⁷ Here I am disagreeing with Sandbach, who thinks that the governing power calculates the distance from the ear to itself (p. 45 n.b). As I read the passage, that is not the case. Indeed, the comparison with hearing is especially well chosen, for it makes clear what the previous cases do not. If we focus only on blows to the body (toe, head, finger), we may think that the sensing part of the soul is located wherever a blow occurs. For the pain is felt to be at the point of impact. But if we focus on hearing, we will be more likely to recognize a central governing power. Except for unusual cases in which one suffers from “ringing in the ears,” we hear sounds as occurring outside the body (we think that they are outside: τὴν φωνὴν . . . ἔξω δοκοῦμεν εἶναι) and most often we locate the source of the sound with considerable accuracy. That is not to deny that the external stimulus causes a motion to occur in the ear. But this motion passes to the area in the region of the eyebrows, where the governing power is located.

¹⁸ The use of προσλογίζεσθαι in **63B** invites comparison with the use of λογισμοί in Porphyrius, *On Abstinence* 3.25.3 = Theophrastus fr. 531.18 FHS&G (see above, section II). Whether or not Strato consciously made the connection, it is true that **63B** presents one way in which men and animals might be viewed as akin (531.13 FHS&G). They both share in the calculations involved in sense perception.

¹⁹ For the example, see above, section I.

off in a third direction.²⁰ Such behavior on the part of animals might be grounds for assigning them intellect as well sense perception, but it is not Strato's concern, at least in the fragments that have been preserved in our sources. Rather, Strato combines the intellect and the senses into a single faculty, and he does so because his focus is on sense perception. He recognizes that sense perception involves not only attention (62) but also an awareness that the stimuli come from a source that may or may not be in the body (63B). Being a physicalist, he is not tempted to assign the determination of the source to the intellect as conceived of by Aristotle, i.e., to a separate faculty that has no bodily organ. Rather he opts for an economical view of perception, according to which there is a single embodied capacity that is located in the head and common to both animals and human beings.

In making a single faculty out of the intellect and the senses²¹ and in assigning this faculty to animals as well as men, Strato represents a kind of end-stage in the humanization of animals.²² As discussed above, a tendency in that direction is apparent in the fragments of Theophrastus. Strato made it reality by developing his own physicalist's view of soul. The sharp divide that characterizes Aristotle's *scala naturae* was set aside in favor of difference in degree. The point is made by Damascius, who tells us that according to Strato some souls are sharper and others duller (*On Plato's Phaedo* 93A11–B6 = 79).²³ Here I add only that difference in degree is compatible with difference in kind. Theophrastus understood that, and if my reading of him is not faulty, he also recognized that difference in degree can be determinant of difference in kind.²⁴ Strato may have discussed the matter in his work *On the More and Less* (Diogenes Laertius, *Lives of the Philosophers* 5.60 = 1) and in some other work insisted that the differences between animal and human soul are such that the two may be said to differ in kind. Moreover, he may have argued that difference in degree can exist

²⁰ The hunting dog is cited by Sextus Empiricus, *Outlines of Pyrrhonism* 1.69, Plutarch, *Whether Land or Sea Animals are Cleverer* 13 969A–B, Aelian, *On the Characteristics of Animals* 6.59, Porphyry, *On Abstinence* 3.6.3.

²¹ On one reading of 61, Sextus Empiricus is explicit in crediting Strato with breaking new ground: ἡρξε Στράτων (*Against the Mathematicians* 7.350), but Sextus' words can be construed in a different way. So Sharples, in note 3 to his translation of 61 writes, "Or 'this faction was led.'"

²² Dirlmeier, 90 n.2, speaks of Strato as an "Endpunkt" in regard to the identification of human and animal psychology.

²³ Wehrli (1969a) 76.

²⁴ Cf. Theophrastus, fr. 438 FHS&G and *Research on Plants* 1.1.6 together with my article (1985) 212ff.

along side absence. To be sure, some animals may have, e.g., a keener sense of smell than others, and many are superior to human beings in this regard. But it does not follow that the souls of animals are capable of doing everything that human souls can do. To take an extreme case, Strato might hold that the dog at the crossroads is capable of sorting out which road to take in pursuit of the hare, but he might deny that a dog is capable of formulating a disjunctive hypothetical syllogism in the way that a logician might.²⁵ And the dolphin that carries a boy to sea only to have the boy drown may suffer feelings of loss, but it does not follow that he feels personal guilt and for that reason chooses to die on the beach. The dolphin may have been simply overwhelmed by loneliness. But that is speculation.²⁶

In conclusion, I return to Epiphanius and offer a disclaimer. I have not shown that Epiphanius is a reliable witness. His capacity for error is too well attested. Moreover, even if Epiphanius is correct in asserting that according to Strato, "every animal is capable of receiving intellect," it remains possible that Epiphanius never saw a text that made the point explicitly. He may have been guessing or drawing an inference on the basis of fr. 62.²⁷ But whatever the correct explanation, Epiphanius' assertion concerning all animals has encouraged us to take a close look at that the relevant fragments. And that has led us to a further reason for attributing intellect to animals. Not only in men but also in animals, sense perception goes well beyond simple sensation. It frequently involves calculations of distance and location, so that something else must be involved. If the preceding argument is not confused, Strato identified this something else as intellect.

²⁵ The dog appears to have performed a disjunctive hypothetical syllogism of the form: Either A or B or C; but neither A nor B; therefore C. That Theophrastus and Eudemus took an interest in such syllogisms seems most likely (see Barnes, 125–41, and my articles [1998] 39–45 and [2000] 66–69). And Strato, as Theophrastus' successor, will have done so too. If that is correct, Strato's interest in the logic of hypothetical syllogisms may have prompted him not to magnify the intelligence of animals but rather to recognize here, as elsewhere, certain limitations to their intelligence.

²⁶ I find it hard not to ask how Strato's view of animal soul affected his view of animal sacrifice and the eating of meat, but no firm answer is possible. As all too often, our sources fail us.

²⁷ Sharples (1998) 104.

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Strato's *Aporiai* on Plato's *Phaedo*

Luciana Repici

I. Strato as an Aporetic Reader of Plato¹

Reported by the sixth-century neo-platonic commentator Olympiodorus or maybe Damascius,² Strato's *aporiai* on Plato's *Phaedo* deal with important points of the dialogue and present us with two orders of questions to be answered, namely (a) the evaluation of their degree of cogency and (b) the reconstruction of their positive philosophical background, if any.

¹ I wish to thank gratefully all the participants in the discussion for their helpful comments and suggestions. To Bill Fortenbaugh and Bob Sharples my special gratitude for their so careful and patient improvements of my poor English and their generous help in refining aspects of my discussion. Obviously mine is the responsibility for possible misunderstandings and/or persistent errors.

² Cf. Beutler 1939, col. 217. In the text of the commentator Strato's name is never accompanied by one of the appellations by which he is usually designated in other ancient sources, namely "the physicist" (fr. 1, 1 app., 8 A–B, 19A, 35, 35 app., 36, 40, 45B, 53, 54, 60, 61, 62, 63B Sharples in this volume); "native of Lampsacus" (fr. 1, 1 app., 15, 18, 27 A–B, 28B, 31, 41, 47 Sharples); "the Peripatetic" (fr. 19B, 20, 73 A–B Sharples). Accordingly, it is only on the grounds of his interests in epistemology and psychology that these *aporiai* can be traced back to him.

In what follows, I will be trying to answer these questions, arguing that Strato's *aporiai* are genuine *aporiai*, that is to say dialectical arguments, and that neither from a methodological point of view, nor by their contents are they critical arguments addressed against Aristotelian theories, as is usually held when Strato's so called "system" is spoken of.³

Strato's interests in dialectics, and in dialectics of a certain type, are well attested in ancient sources. As a dialectician he is mentioned by the Stoic Chrysippus, who numbered him in a school sequence jointly inclusive of Academy (Socrates, Plato, Polemon) and Peripatos (Aristotle). Chrysippus did not deny that these philosophers had taken great care to speak of dialectics, thereby showing the very importance of such an "ability"; what he wondered at (or pretended to wonder at) was that they could have been so utterly mistaken.⁴ What these mistakes were in Chrysippus' view, we are not told. We could, however, infer from his constructive conception of dialectics as a science appointed to the discovery of truth that he could blame the practice of those who, like the Sceptical Academics, used it as an improper weapon to introduce suspension of judgment.⁵ Plausibly, then, what Chrysippus disliked was the way in which Socrates and Plato on the one side and, on the other, Aristotle and Strato had used dialectics for disputation and refutation. If this is the case, Strato's *aporiai* on the *Phaedo* can reasonably be interpreted mainly as a work of logical-argumentative demolition, all the more so because the aporetic way of arguing was a typical case of demolition by dialectics.

Nevertheless, one might say, Chrysippus' evaluation is simply indirect confirmation of Strato's main interests and does not exclude that the latter approved of positions opposite to Plato's, moving even further than Aristotle himself did.⁶ There is however a passage in the historian Polybius which

³ On this line of interpretation, see Repici 1988. On the existence of a "physical system" in Strato, cf. already Diels 1893.

⁴ Chrysippus in Plutarch, *De Stoicorum repugnantis*, 24, 1045F; see Strato fr. 14 Sharples and Chrysippus fr. 126 in *Stoicorum veterum fragmenta* II. Admittedly, according to Diogenes Laertius (IV 18), Polemon argued that one should have "to exercise oneself with facts" more than with "dialectical speculations," in order to avoid being in the same condition as a man who wins admiration "in asking questions," but has no coherent inner disposition, like he who has learned music, but is unable to practise it.

⁵ On Chrysippus' definition of dialectic, cf. Diogenes Laertius VII 62 (*Stoicorum veterum fragmenta* II fr. 122); on his polemical attitude toward the Sceptical Academics, cf. Plutarch, *De Stoicorum repugnantis*, 10, 1035f; 1037b (*Stoicorum veterum fragmenta* II, frs. 127 and 128 respectively).

⁶ So Wehrli 1950, 75, *ad* his fr. 122–27. Movia 1968, 146–49, objecting to this interpretation, argues that Strato would have criticized Plato on the basis of his own epistemological and psychological assumptions, not on the basis of Aristotle's supposedly weak defence of

explicitly describes Strato's way of arguing as one of dialectical demolition. For Polybius says that Strato was "extraordinary" when "he set out to overturn and reduce to falsehood other people's opinions," whilst, "when uttering something of his own and explaining his own point of view, he looked to the savants far more foolish and slow-witted <than he was>."⁷ His *aporiai* on the *Phaedo* would then seem to be a good example of a way of doing philosophy in which dialectical refutation and demolition were privileged over constructive arguments. This does not necessarily mean that Strato had no opinions (doctrines) of his own or was unable to uphold them, nor that he confined himself to raising *aporiai* without any interest in their solution. Such a state of affairs is seemingly excluded by some titles in the catalogue of his works like *Solutions of aporetic questions*, or *On the causes* or *On definition*, which suggest a constructive aim.⁸ The problem is that, given the scarcity of evidence, it is hard for us to grasp how this aim was developed. Nevertheless, a conclusion of no minor significance can be inferred. This is that a dialectician like Strato, if he was not the sort of dialectician preferred by a Stoic philosopher like Chrysippus, could not have been a model dialectician for an Epicurean philosopher either. The latter was in fact requested "to make dogmatic assertions and not to speak by *aporiai*."⁹

some Platonic assumptions. As Gottschalk 1965, 165 has pointed out, Plato's *Phaedo* was a reference point for discussions on the immortality of the soul for Peripatetic and Academic as well as Stoic scholars, like Boethus and Panaetius. A complete survey of this story is to be found in Carlini 1972. Cf. also Carlini 1996, 127–30.

⁷ Polybius, *Historiae*, XII 25c3 (fr. 10 Sharples). In the passage the case of Strato is assimilated to that of the historian Timaeus, who in Polybius' view owed his fame simply to his critical and gossiping attitude. The evaluation of Strato's activity is not a flattering one, but the testimony is ancient and authoritative, once it is deprived of its contingent aspects, i.e. the dispute among historians and their respective conception of history. All the more so because Polybius' evidence comes not from a school philosopher, but from an intellectual outsider. Dialectical and aporetic approaches to physical questions are attributed to Strato in relation to his treatments of time (cf. fr. 31 and 32 Sharples) and void (cf. fr. 27B–28A&B Sharples) by Simplicius.

⁸ The catalogue is transmitted by Diogenes Laertius, V 59 (fr. 1 Sharples); the titles referred to in the text correspond to the numbers 36, 35 and 39 respectively. Since no mention of them occurs, it is obviously difficult to decide whether the *aporiai* on Plato's *Phaedo* were an independent work or belonged to a larger one. Surely, they suggest oral debates in school practice, where the text was discussed and commented upon. Diogenes' list includes also a work whose title was *On animals about which there are aporiai* (*Peri ton aporoumenon zoon*), to be distinguished from another one *On animals of which myths speak* (*Peri ton mythologoumenon zoon*). Cf. *loc. cit.*, nn. 33 and 34. Seemingly, also in the real, not mythical zoological field Strato found reasons to discuss and debate dialectically.

⁹ Diogenes Laertius, X 136.

II. Strato and the Senses of *Aporia*

In view of the above, we can safely give Strato's *aporiai* not so much the static value of difficulty, puzzle, doubt or uncertainty, in the sense of objection or criticism categorically asserted, as rather the active one of obstacle or obstruction that, for purposes of dialectical debating, is meant to find fault with arguments following their development step by step and examining their claims to proceed to their conclusions. Therefore, we can also argue, Chrysippus was not wrong in connecting Strato's dialectics to Socrates', Plato's and Aristotle's. From all of them, in spite of their differences, Strato could learn how effective a method of enquiry and critical examination the *aporia* could be. It not only ensured the opportunity to evaluate the reliability and credibility of any theory, side by side with the search for the establishment of truth and the refutation of the false; as Aristotle had shown, it could also be used successfully to defend one's own theories, i.e. for getting acquainted in advance with and so averting any possible obstacle that could obstruct the establishment of one's own point of view.

Strato does, of course, proceed in his own way. In his aporetic comment on the *Phaedo*, he does not start from that condition of ignorance in which Plato's Socrates and/or his interlocutors were involved; nor does his investigation develop in a dialogue format. Rather, Strato starts from his dissatisfaction with a written text. He then runs through the path already completed and by his *aporiai* he anatomizes, as it were, the selected arguments, pointing at the obstacles that make their conclusions appear arbitrary and unacceptable. *Aporia* in Plato's view should release the soul from its vicious *impasse*, but, as Strato could learn from Aristotle, this was only a part of the story. An *aporia* must also eliminate from the subject under scrutiny any ambiguity and/or obscurity whatsoever. In my view, that was what Theophrastus aimed at when reopening by the *aporiai* of his *Metaphysics* the discussion of some of the most important themes of Aristotelian philosophy, like the relationship between intelligible and perceptual objects, the first principles, the heavenly movements or the finality of nature. That means that his *aporiai* are genuine *aporiai*, i.e. dialectical arguments whose target was to single out, and therefore eliminate, any possible obscurities and/or ambiguities which might still surround Aristotle's doctrines or vocabulary, as well as to prevent any possible obstacles from occurring and to suggest in advance possible ways of escaping, if any obstacle should make its appearance.

Strato too seems to have appreciated the aporetic examination in his philosophical practice. But this is no reason why he and Theophrastus should be seen as unfaithful pupils of Aristotle. In Aristotle's typical method of *aporiai*, the identification of any possible obstacles or obstructions was vital, in order that they might be overcome and the truth discovered. So vital, one may argue, that overcoming them, far from being a simple means for the discovery of the truth, could possibly have corresponded in Aristotle's view directly to the discovery of the truth. Neither Strato nor Theophrastus before him had therefore to make a long journey when searching for that use of dialectics as a weapon which Chrysippus disliked so much. It goes without saying that, this being so, to claim the actual possibility of constructing Strato's positive doctrines on this basis and interpreting them as weapons turned against Aristotle, is hazardous, to say the least.¹⁰

III. Strato and Cyclical Immortality

One group of *aporiai* formulated by Strato was about Plato's argument from cyclical opposites—opposites, that is to say, which come-to-be one from the destruction of the other. By this “hypothesis” in the *Phaedo* (70C4–72E2) the immortality of the soul was explained with reference to an endless mutual exchange of life and death, and of living and dying, into one another. So that the soul was actually always alive, but alternately it entered a body, reviving from the world of the dead, and to there it returned safely when moving out of the body at the moment of the death. Strato's *aporetic* claims on this argument were the following:

1. If things that exist do not come from things that have perished, as things that have perished do from things that exist, how can it be reasonable to believe in the strength of such a way of arguing?
2. If a dead part does not revive, e.g. a cut-off finger or an eye, neither, clearly, does the whole.
3. Even if there are things that come from one another, they are identical only specifically, not numerically.

¹⁰ For more detailed studies on the usage of *aporia* in Plato and Aristotle, see Barnes 1990; Aubenque 1961; Motte & Rutten 2001. On the dialectical interpretation of Theophrastus' *Metaphysics* compare also Repici 1990. In both his commentaries and his *Quaestiones* Alexander of Aphrodisias raises *aporiai* on the Aristotelian texts, in an effort to give Aristotle's inconsistencies or problematic propositions a solution and his views a systematic coherence: see Fazzo 2002, 18–31.

4. If flesh comes from food, food surely does not come from flesh, and verdigris comes from bronze and coal from wood, but the converse surely is not the case.
5. If old men come from young ones, the converse surely is not the case.
6. If the substratum persists, opposites can come from one another; surely they cannot if it has perished.
7. If coming-to-be does not cease, this is so only so long as things of the same kind are produced, just as it is also with artifacts.”¹¹

If we rearrange this set of Strato's arguments according to a conceptual order, we can see that they ask (a) whether and how the movement from generation to corruption can be said always to find a correspondence in the inverse movement; for, if it were not so, there could be no reciprocity (*aporia* 1). Besides (b), whether it is not the persistence of a substrate that allows the reciprocal generation of the opposites to take place (*aporia* 6). Again (c), whether what comes-to-be from its opposite maintains its specific identity, but not the numerical one, as happens in the field of hand-made products, where one single species or form apparently is reproduced in a multiplicity of objects (*aporiai* 3 and 7). Then (d), whether a whole can be said to revive, whose parts do not come alive again; as, e.g., severed fingers or eyes in living beings never come alive again, how should whole living beings? (*aporia* 2). Lastly (e), whether and how the hypothesis under scrutiny can explain occurrences of opposites apparently not mutually reversible, as can be seen both among ensouled natures (men, for example, become old being previously young, but the reverse does not hold, and (their) flesh comes-to-be from food, but not *vice versa*), and among inanimate natures (charcoal, for example, comes from wood, but the reverse does not hold), and among hand-made products (verdigris, for example, comes-to-be from bronze, but not *vice versa*) (*aporiai* 4 and 5).

It will be noticed that no direct commitment on the part of their author becomes apparent through these aporetic comments of his. Strato rather focuses his hypothetical arguments, thus at least these *aporiai* are presented in our source, on the topic of the mutual conversion between opposites,

¹¹ (Pseudo-) Olympiodorus, *In Platonis Phaedonem commentaria*, D 63, pp. 221, 24–222, 4 Norvin (fr. 76 Sharples; 13 Gottschalk), my translation. Translations can be found also in Hackforth 1952, 195; Westerink 1977, 320; Sharples in this volume. The section is entitled “Strato's *aporiai* against the first argument, the argument from opposites.”

asking when and in which cases opposites convert into one another in objects which admit opposites. If that is correct, Strato could be drawing from Aristotle both his methods and his contents. As to the methods, there can be little doubt that Strato's arguments exhibit, here and for that matter in any other set of his *aporiai*, Aristotelian features, rooted as they are in reasoning and experience joined together. Strato's vocabulary too is Aristotelian here, as is clear from the occurrence of the notion of a substrate.¹² Nor is this a simply terminological borrowing; in the background, it is easy to perceive the Aristotelian distinction between generation *simpliciter* and generation as an alteration, not known to Plato. Also with the account of art and nature, here hinted at by Strato as related, analogically compatible fields, Aristotle would not have been dissatisfied.

On the other side, as to their contents, that is the distribution of opposites among beings subject to coming-to-be and passing-away, Strato's *aporiai* reflect a deep Aristotelian concern, especially apparent when living beings were dealt with. A remarkable case is *aporia* 2; for the argument is here a generalisation from part to whole and assumes an Aristotelian hylomorphic view of the soul by suggesting the functional utility of parts in the living body and its organic arrangement as a whole. Besides, it was in Aristotle that Strato could find the distinction between opposites that belong to living beings only accidentally, like sanity and disease, and opposites that belong *per se* to them, like sleep and waking, youth and old age, length and shortness of life or life and death themselves. It was Aristotle who had further distinguished between (a) opposites that convert reciprocally into one another and convey no unnatural condition in both cases, like sleep and waking; (b) opposites that convey no unnatural condition in both cases, but do not convert reciprocally into one another, like youth and old age—a case not by chance referred to by Strato here; (c) opposites that do not convert reciprocally into one another and are reciprocally contrasted as, respectively, a natural condition and an unnatural one, like sight and blindness. As to life and death, as we know and Strato too is likely to have known, Aristotle held them to be irreversible opposites, to be identified, respectively, with the preservation and the extinction of "natural fire." Otherwise, he argued, we should suppose that the soul could enter the body and alternately get out of it in a process of transmigration, so opening

¹² As already pointed out by Wehrli 1950, 75, *ad* his fr. 122–27 and Gottschalk 1965, 165.

the door to the “Pythagorean myths.”¹³ The reference to Plato’s *Phaedo* here is, I think, indisputable. By his *aporiai* Strato at least did not blame Plato, or did not do so explicitly, for his mythical preferences.

IV. Strato and Oblivious Immortality

Unlike the above *aporiai*, Strato’s *aporiai* about Plato’s theory of recollection (*Phaedo*, 72E3–77B1) are reported by the neo-platonic commentator together with the solutions he opposed to them, which makes harder the construction and interpretation of their original character. Here they are:

- (1) . . . Strato *aporetically* argued that, if there is recollection, is it not the case that we will get hold of knowledge without proofs? And is it not the case that anybody will become a flute-player or lyre-player without application? [*not in Wehrli*] Or else, first of all there have been self-taught men, like Heraclitus, the Egyptian farmer, Phemius in Homer, the painter Agatharchus. Moreover, souls possessed by the great torpor of genesis can be led to recollection

¹³ On this point, Aristotle, *De anima*, I 3, 407b12–26. For general remarks on the notion of opposition, see *Categoriae*, 10; *Metaphysica*, V 10; V 22, X 3; X 4; *Topica*, II 8; VI 8. On the distribution of opposites belonging per se to living beings, *De sensu*, I, 463a1–17 and cf. *De somno et vigilia*, I, 453b24–31. Opposites like length and shortness of life are mutually incompatible, but under certain conditions short-lived beings can live longer and long-lived beings can die earlier: see *De longitudine et brevitate vitae*, particularly 4–6. (Pseudo-) Olympiodorus finds Aristotle’s attitude in this respect in a way ambiguous. In his view, the “ancient *logos*” on the transmigration of the soul acquired necessity if two assumptions were firmly maintained, namely the eternity of the world and the immortality of the soul. Aristotle had in fact assumed both, but incoherently refused to draw from them the natural conclusion concerning soul’s transmigration. Cf. (Pseudo-) Olympiodorus, *In Platonis Phaedonem commentaria*, A X 1, pp. 56, 13–57, 1; A IX 8, p. 55, 14–19 Norvin. By his *Solutions* to Strato’s *aporiai* a theory of separation of the soul is apparently required. For, he argues that the soul (a) does not admit the opposites in the same way as the body, being in possession or deprived of them and existing or not existing accordingly (solutions to *aporiai* 1, 2 and 5); (b) partakes not of opposites that, being corruptible, can reverse into one another, like the body, but of opposites that, being incorruptible, perish when approaching one another (solution to *aporia* 4); (c) maintains, unlike the body, its numerical and specific identity, i.e. never changes its status nor dissolves (solution to *aporiai* 3, 6 and 7). Cfr. (Pseudo-) Olympiodorus, *In Platonis Phaedonem commentaria*, D 64, pp. 222, 6–223, 5 Norvin. Obviously, however, it is one thing that a neo-platonic commentator could see in Strato’s *aporiai* a threat to Plato’s theory of separate soul; quite another thing is to credit Strato himself with the negation of such a theory. In any case, it would not be easy to identify Strato’s position as anti-Aristotelian, looking at the consequences ensuing from Aristotle’s definition of soul as the form of the body.

with great effort; and this is why they need to be supported by sensible things.

- (2) Why is it that nobody will recollect without proof, as Strato *aporetically* argues? [*not in Wehrli*] To be sure, apodeictic necessity, not recollection persuades the soul. Or else, the commentator says, the first things are grasped by mind's direct comprehension, while the proofs are added to introduce articulations. But it is better to say that proof has been discovered as a support.
- (3) Either <souls (?)> have their knowledge before time, in which case however they will have got hold of it forever, because they have no need of time nor are they affected by time; or <their scientific knowledge begins> at a certain time, and in that case they will have knowledge without recollection, for they learn for the first time. Or else, even then they recollect the knowledge they got hold of before entering the body; in fact, their maker had, to be sure, made them perfect, hence in possession of knowledge; yet, when they have come here, they need to learn, hence to recollect. Moreover, in addition to this, in his division Strato leaves out everlasting time; for, between that which is before time and that which is at a certain time, we have what is always in time.
- (4) Why then is recollection not easily reached? Or else, in some cases it is, whilst most people need training.¹⁴

The pivotal point of this group of arguments is the contradictory opposition they introduce between recollection and proof: as ways to knowledge, they are assumed to be mutually incompatible and exclusive of one another. This is so already in the *first* argument (case 1, fr. 77A Sharples), which schematically may be rewritten: if there is recollection, it is not the case that knowledge is proof, or else, putting it in terms of a Stoic negated conjunction: it is not the case that knowledge is recollection and proof; so that, if knowledge is recollection, knowledge is not proof. The connected

¹⁴ On the four *aporiai*, see respectively (Pseudo-) Olympiodorus, *In Platonis Phaedonem commentaria*, C II 41, p. 158, 6–12 Norvin (fr. 77A Sharples; 14c Gottschalk); D 25, p. 211, 19–23 Norvin (fr. 77B Sharples; 14b Gottschalk); D 65, p. 223, 8–19 Norvin (fr. 78 Sharples; 14a Gottschalk), my translation and italics. Translations can be found also in Hackforth 1952, 197–98; Westerink 1977, 172; 300; 324 respectively; Sharples in this volume. Although reported in different contexts, the *aporiai* under scrutiny form a single group and as such they seem to be considered by the commentator, who takes them to be “Strato's *aporiai* against the argument of recollection” (p. 223, 6–7 Norvin). Given the unbroken continuity in the text between Strato's arguments and the replies of the source, I will be quoting them in full.

reference in this context to the learning of a skill like music, if it is Strato's, may be taken both as an illustration of the point, and as an application of the same point to technical abilities, in order to stress the impossibility of explaining knowledge as recollection by putting in evidence a paradoxical result of the hypothesis. This is the fact that, if there were recollection, as there could be knowledge without proof, so anyone would be able to play a lyre or a flute without having learned in advance the corresponding skill.

The *second* argument also (case 2, fr. **77B** Sharples), where the original *aporia* is practically indistinguishable in the context from the commentator's reply, points to the same contradictory opposition. Here, however, a further reason is apparently introduced against the identification of knowing and recollecting; that is the fact that only proof could persuade soul by its own necessity. To Strato, then, recollection as a way to knowledge was questionable also because it had no necessitating power, so that the knowledge it secured, if any, would only have been weak. In turn, the *third* argument (case 3, fr. **78** Sharples) faces recollection with a radical alternative. It too can be formulated in terms of a Stoic disjunction: recollection either is knowledge completely independent of time, although in this case everybody should always possess it; or it is not knowledge independent of time, although in this case there would be knowledge without recollection. Hence, we can add to complete the reasoning, either the first does hold, but not the second, or the second, but not the first. The first, however, could hardly hold owing to the impossible result to which it leads, that is that knowledge would be always possessed by everybody. Lastly, in the *fourth* argument (case 4, *ibidem* Sharples, last part), particularly elliptical in its formulation, the aporetic comment treats the question just pointed at in a more developed way: it asks whether recollection, depending as it does on knowledge gained by everybody before being born, is the common possession of all men and can be easily reached by everyone.¹⁵

¹⁵ In Aristotle, *Metaphysica*, I 9, 992b24–993a2, a similar *aporia* is turned against Plato (or Plato's pupils) on the existence of principles assumed to be identical for all things. Even if they existed, Aristotle argues, they could not be apprehended. For, the science of them, which should be called "science of all things," could not derive from any preceding knowledge, otherwise there could not be any apprehension—he who starts apprehending geometry, for example, does not know in advance the objects that he is going to apprehend. Yet, any apprehension comes from previous knowledge, acquired either by proof or by induction. On the other side, such a science cannot be "connate" (*symphytos*) either, because it would be amazing to possess "the best of the sciences" without being aware of it. Here again the counter-arguments of the commentator in response to Strato started from the fear that the soul could lose its separateness and reduce its cognitive powers when detached from the body. He objects *firstly* that recollection and proof are not incompatible, since

If I do not misunderstand, what faces us here are the four reasons for Strato's dissatisfaction with Platonic recollection; i.e., first, its inadequacy as a method of knowing involving proof; secondly, its weak persuasiveness; thirdly, its inconsistency in explaining knowledge both as a non-gradual apprehension, formerly given once and for all, and as a process gradually approaching its goal; fourthly, its failure to be the sort of knowledge that everybody could safely expect to gain. How effective these arguments are we can better appreciate if we think that recollection is presented in the *Phaedo* as a "hypothesis deserving acceptance" and credible and proven as well, even though partially. Particularly the third and the fourth arguments make their point, as they dwell upon an *aporia* that Platonic discussion had run into. That is the fact that, on the one hand, knowledge to be recollected must have been acquired before the time of birth, so that we all should be born already possessing of it. Yet, on the other hand, if there must be any learning, necessarily we have to forget what we have previously known; otherwise, we would be born "being possessed of knowledge always" and "we always would have it throughout our life." Hence the dichotomous

learning, even technical learning, can take place either by itself, as in self-taught men, or by sense-perception, as when souls are overcome by the torpor of ignorance (case 1). *Secondly*, recollection does not exclude proof because the objects of knowledge can be grasped either by "direct apprehension" (*epibole*), or by "articulation" (*diarthrosis*), or even because proof can be of help in recollection (case 2). *Thirdly*, recollection is both recall of notions grasped prior to time and learning, hence a process of knowing that develops in time (case 3). *Fourthly*, recollection is not easily achieved by everyone, because some need no training, while others (the most part, as a matter of fact) do (case 4). We can then explain the emphasis laid by the commentator on the existence of self-taught men (appealed to in relation to Strato's cases 1 and 4), that are considered as living evidence of a non-acquired knowledge. In the commentator's view their condition seemingly is a privileged one, in opposition to that of common and/or ignorant men. In fact, Plato explicitly states that knowledge by recollection belongs to those few who are able to account for what they know. Yet, we are also told that everybody, if well questioned, can 'say how everything is': Plato, *Phaedo*, 73A6–B2, with reference to *Meno*, 80D5–86C2. In relation to Strato's case 3, (Pseudo-) Olympiodorus blames him for having dismissed 'everlasting time'. On this basis it is claimed that Strato would have, against both Plato and Aristotle, positively denied that any incorruptible objects could exist; see Wehrli 1950, 63 (*ad* his fr. 80); Gatzemeier 1970, 128; Schmidt 1962. Yet, the dialectical aim of Strato's arguments should not once again be forgotten, all the more so because we know from Simplicius that Strato dealt *aporetically* with time as well: Simplicius, *In Aristotelis Physica (Corollarium de tempore)*, 800, 16 Diels (fr. 32 Sharples). In this context, the commentator also retorts to Strato that the possession of knowledge prior to life is required by the perfection of the soul such as its creator has made it. But this rejoinder could be relevant to a neo-platonic author; to an Aristotelian philosopher it could hardly be an inescapable difficulty, seeing that Aristotle had taken the soul to be the form of the body and in no way subject to movement and/or change. On the last point, see Aristotle, *Physica* V 1, 224b5; b27.

alternative: either knowledge is possessed always by everyone, or we get hold of it by recollection. But the first way led nowhere, as Plato himself argued; for, if he who knows can account for what he knows, it is quite clear that not everyone possesses knowledge, seeing that not everyone is able to account for what he knows. The other way was left, but in this case too it was apparent that getting hold of knowledge by recollection was no easy matter for everyone, while the hypothesis required that it pertained to *all*. Such a requirement, indeed, could not be easily abandoned, since it was impossible to think that knowledge to be recollected was learned at the moment of birth; otherwise, either there would not have been a time in which it was forgotten or the paradoxical conclusion should have been drawn that such knowledge was acquired in the same moment in which it was forgotten.¹⁶ By his two *aporiai* then, which even in their logical structure are reminiscent of Plato's dichotomous way of arguing, Strato clearly takes Platonic *aporia* to extremes, stressing as he does the temporal difficulties, so to say, by which recollection was surrounded. The theory in fact seemed as it were suspended between an admitted knowledge requiring no time to develop, which theoretically should be got hold of by every soul in the time before birth, and knowledge as a process that requires time and develops in time, which however not every soul could get hold of in the lifetime after birth.

Taken as a whole, this set of Strato's *aporiai* evidently analyses in a sort of anatomical dissection Plato's discussion of the point, following step by step its development and scattering with obstacles its way to conclusion. Were we not told that Strato was "extraordinary" when demolishing the opinions of other people? Yet, there are interpreters who, though from different points of view, want to see in these *aporiai* an indirect confirmation of Strato's sensationalism, which in their opinion would, in contrast to Plato, dismiss any a priori knowledge and, in contrast to Aristotle, would reduce thought to sense-perception.¹⁷

The problem is that, on the one hand, here again no direct commitment on the part of their author makes its appearance in these *aporiai*; it is hardly

¹⁶ Plato, *Phaedo*, 75C7–76D6.

¹⁷ The point is categorically stated by Wehrli 1950, 76, *ad* his fr. 125–27. A more moderate position is taken by Gottschalk 1965, 166, *ad* his fr. 14 b–c, who admits the difficulty of constructing Strato's doctrine on dialectical foundations like these, though he finds that Strato's adherence to a sensationalism reminiscent of Epicurean or Stoic views should be a 'known' fact. In a more radical attitude, Isnardi Parente 1991, 124–25 pictures Strato's epistemology as straightforward 'anti-intuitionism', while she too connects Strato's (supposed) sensationalism with Epicurean or Stoic views. No information at all about Strato's philosophy could be inferred from these *aporiai* according to Gatzemeier 1970, 136.

possible, then, to infer from them any positive statement. Besides, Aristotle is unequivocally a point of conceptual reference. It was Aristotle who had pictured (scientific) knowledge as proof; it was Aristotle who, long before Strato, had challenged the existence of ideal forms and censured recollection when solving the well-known paradox of the *Meno*; nor was it by recollection that Aristotle let thought know its objects.¹⁸ On the other hand, no information we have got from ancient sources on Strato's epistemology can be taken as an unquestionable testimony of his anti-Aristotelian sensationalism. Accordingly, it can be safely argued that, rather than approving of *intelligent or knowing sense-perceptions*, as is supposedly inferred from doxographical accounts and authors like Plutarch or Sextus Empiricus, Strato could have aimed at stressing, in a more Aristotelian fashion, the close cooperation to be found between sense-perception and thought. And he could have done so by referring to the empirical occurrence of aporetic cases where sense-perception seemed to require some sort of awareness, as when we look but do not see, and arguing that thought had no other means of contact with external objects than sensory organs.¹⁹ Again, rather than

¹⁸ See Aristotle, *Analytica posteriora*, II 19 (the difficult chapter on the apprehension of the principles); I 1, 71a17–b8 (on the paradox of Plato's *Meno*, 80d5–e5). On the point, cf. Repici 1988, 1–26; 33–39.

¹⁹ Particularly by Plutarch, *De sollertia animalium*, 961A (fr. 62 Sharples); [Plutarch], *De libidine et aegritudine*, 967B (fr. 63B Sharples); [Plutarch], *Epitoma*, IV 23, 3 (fr. 63A Sharples), Strato is said to have linked the capacity of sense-perception spread all over the body to a single *hegemonikon*, comprehensive in a Stoic fashion of thought, sense-perceptions and emotions, from which the affections were transmitted to the body. Yet, the term *hegemonikon* here could be the translation into Stoic language of Aristotle's "primary organ of sense-perception," by which "we perceive everything we do perceive" (*De somno et vigilia*, 2, 455a12–22). Therefore, it could be to such a sort of *hegemonikon* that Strato could have meant to refer. In turn, Sextus Empiricus (*Adversus mathematicos*, VII 350, fr. 61 Sharples) credits Strato with both (a) a direct identification of thought and sense-perception and (b) an interpretation of the knowing activity of thought in terms of its "stretching out" through the sensory organs towards the external world. Nevertheless, deprived of its emphatic character, connected to the usual Septic procedure of opposing contradictory theses to one another, this testimony could amount, as is argued in the text, to no more than a confirmation of the priority of sense-perception in the process of knowledge and of its representing for thought a sort of eye on the world. Sextus also puts Strato side by side with Epicurus in the rejection of the Stoic doctrine and in the location of truth and falsehood in the corporeal "voices" by which we designate external objects, not in the incorporeal *lekta* (*Adversus mathematicos*, VIII 12, fr. 60 Sharples). Usually, this (supposed) rejection on the part of Strato is taken as a further confirmation of his sensationalism and materialism. Yet, like Aristotle before him (*De interpretatione*, 1, 16a9–15; cf. *De anima*, III 7, 431a8–17), Strato maybe meant to stress that a rational "presentation" (the Stoic *phantasia*) of an object is not sufficient to say whether it is true or false, because the case would be the same as thinking and speaking of an object by itself, simply as a consequence of its "apparent presentation"

approving a unification of sense-perception and thought by reducing them to the same type of movement, as is supposedly inferred from a passage in Simplicius corrected on purpose,²⁰ he could have aimed at suggesting, here again in a more Aristotelian fashion, their similar way of functioning, with an eye for the priority or, if you like, the indispensability of sense-perception.²¹ But Aristotle would have been on his side, while they both were confronted with Plato.

(the Aristotelian *phantasia*), but apart from “combination and separation,” whereas truth and falsehood, both in spoken language and in thought, could only result from the “combination and separation” of names and verbs (i.e. the propositions) or of notions. It is worth remembering once again that Lucretius (III 359–69) dismisses the thesis by which “the eyes can not discern anything, but through them the soul sees as through open doors (*per eos animum ut foribus spectare reclusis*)” (359–60), as if in perceiving the soul moved outwards; to him the case is rather that sense-perception is a movement inwards, which takes place in consequence of the presence of the soul spread all over the body.

²⁰ Simplicius, *In Aristotelis Physica*, 965, 7 Diels (fr. 41 Sharples). First of all, the commentator presents Strato’s argument in his own words and relates that in Strato’s view “not only the irrational soul is moved, but also the rational,” because he took the activities of the soul also to be “movements.” Then, as a support to what he has been saying, Simplicius introduces the first (direct) quotation from Strato’s work *On movement*, which runs: “Always in fact he who understands is moved just like he who sees, hears or smells, for understanding is an activity of thought just like sight of seeing.” Here, as a further support, the second quotation from Strato’s same work is given, where however the main clause has seemingly been lost: “Since (*epei*) then movements are for the most part both the *causes* (*aitiai*, codd.) by which the soul moves itself by itself when it thinks and <the *causes*> by which it was previously moved by sense-perceptions. But this is clear: <the soul> cannot think what it has not seen previously, for example places, harbours, pictures, statues, men and similar things.” The proposed emendation reads in the latter text *hai autai*, “the same,” instead of *aitiai*, “causes,” hence the rendering would run: “Since then *the same* are for the most part both the movements by which the soul moves itself by itself when it thinks and the movements by which it was previously moved etc.” And here again a confirmation of Strato’s supposed sensationalism is usually inferred. Yet, Aristotle himself on the one hand did not exclude that soul ‘moves and is moved’ when it strives for a good (*De anima*, III 10, 433b13–18). Then Strato’s claim concerning the “movement” of the soul could sound less anti-aristotelian, whilst his point could be taken simply to be that the soul would be ‘moved’ to the same extent as it would be affected by (or acted upon by) the objects of its knowledge, both if he argued that “movements” are “the causes” by which the soul thinks and perceives and if he is supposed to have said that the “movements” of the soul are “the same” when it thinks and when it perceives. Moreover, Aristotle stated that not only sense-perception depends on the external objects for its actualization, but also the “sciences of sense-perceptible objects,” that is to say both sciences that aim at the production of objects, i.e. arts and skills, and physical sciences (*De anima*, II 5, 417b24–28). Strato could have meant to stress a similar point when introducing the illustrative cases of objects that the soul can not think of before having perceived them; for in the series both technical products (harbours, pictures, statues) and natural objects (places, men) are mentioned. On the “material aspects” of thinking that can be found in Aristotle as well, see van der Eijk 2005, 206–37.

²¹ According to Isnardi Parente 1991, 134–35, given his (supposed) sensationalism,

V. Strato and the Soul as Harmonia

It seems that Strato, as an aporetic reader of Plato's *Phaedo*, not only took into account hypotheses that Plato had admitted, but also examined hypotheses with no acceptance in the dialogue, such as the so called soul-harmonia theory. Yet, in some interpreters' view Strato's only *aporia* on the matter would be no genuine *aporia*; indeed, Strato would here be actually adopting such a theory, like, in the Peripatos, Dicaearchus and Aristoxenos too. And, so we are told, by taking on a conception of the soul according to which it is assimilated to something perceptible and/or tangible like an attunement and/or a blending of bodily parts, Strato would have drawn the materialistic consequences of his sensationalism and reductionism. Even those interpreters who, in turn, see only in this *aporia* a genuine *aporia* like the other ones and accurately distinguish the two meanings of harmonia, credit Strato with a materialization of the soul. They think only that, unlike his fellows Peripatetics, he would have identified it with the inborn

Strato should also be credited with the notion of *aisthêtike apodeixis* ("dimostrazione basata sui sensi," her translation), which can be found in Hero, *Pneumatica*, I Prooemium, p. 15, 15 Schmidt (fr. 1a, p. 112, 13–14 Gottschalk); all the more so because Hero's preface would adopt the theory of interspersed voids seemingly attributed to Strato by Simplicius, *In Aristotelis Physica*, 693, 10 Diels (fr. 30A Sharples). Such a hypothesis was originally formulated by Diels 1893 and is fundamentally accepted by some other editors of Strato's fragments (not by S. Berryman and R. Sharples in this volume), though not uniformly; for Wehrli selects from Hero's preface only those passages whose content can be confirmed by other evidence, while Gottschalk 1965 argues that the entire preface should be traced back to Strato. Hence, in order to ascribe the above notion to Strato, we ought to be sure, first of all, that the whole of Hero's preface, in both its content and its vocabulary, reports Strato's viewpoints. The main problem is, however, that his name is never mentioned by Hero. Secondly, we ought to ask what exactly *aisthêtike apodeixis* does mean. Judging from Hero's own claim in the present passage and elsewhere (cf. fr. 1a, p. 105, 4–6 Gottschalk), the proof is *aisthêtike* insofar as it takes place *epi* or *ek phainomena*, i.e. "in relation to" ("in connection with") or "from" empirical observations, as well as "through what falls under the range of (*hypo*) sense-perception." Therefore, if I do not misunderstand, the expression could hardly mean "to prove *along with* (*by*) perceiving," as if a *perceptive reason*, or a *reason capable of perceiving*, hence reduced to sense-perception, were involved. Rather, we should be faced with a proof that by induction takes its premises from empirical observations and sensorial data, with an eye for the attitude or activity of proving (or of those who prove) by means of sense-perception. This is the case also with science in Aristotle, which he defined as *hexis apodeiktikê* with plausible reference here again to the "attitude (habit) of proving," or to the activity of proving (or of those who prove), so performed; cf. *Ethica Nicomachea*, VI 3, 1139b31.

pneuma and consequently explained its different cognitive powers (sense-perception and thought) in terms of *pneuma* in different conditions.²²

Admittedly, such inferences are conjectured from an elliptical account of the neo-platonic commentator, where Strato's *aporia* is almost entirely swallowed by the passionate reply of our source and abundantly overpowered by it. The text runs:

Just as one harmonia is sharper or flatter than another, so one soul is, Strato says, sharper or more slow-witted than another. [*not in Wehrli*]. Let him say, then, where knowledge and desire, both rational and irrational, come from; for, they can come neither from the body and its temperament (because of their inferiority), nor from knowledge and desire themselves (because they are not separate), nor by chance; therefore they come from above; therefore they are separate because of their being better. Moreover, how can intelligence not be separate, since it knows itself? And if it is at the origin of the movement being itself that which uses the instrument, how can the soul not be outside the instrument?²³

²² On the first interpretation, see particularly Wehrli 1950, 71–75, *ad* his fr. 107–21. On the specific fragment at issue, he claims (*ibidem* 74–75, *ad* his fr. 118) that Strato was drawing here a further consequence of his (supposed) materialistic epistemology, by putting human soul side by side with the souls of other animals. The distinctions are introduced by Gottschalk 1965, 166 *ad* fr. 15 and 1971, 189. On the continuity from Dicaearchus and Aristoxenos to Strato and the interpretation of their psychology as, respectively, a naïve and a more elaborated version of Aristotelian psychology with a great emphasis placed on sensationalism and the physical aspect, see Isnardi Parente 1991, 136. The reduction of the soul to *pneumatic* substance in Strato's theory and the possibility on that basis of connecting Strato's theory to Erasistratus' medical theory were originally argued for in Jaeger 1913. In doxographical accounts, often mutually contrasting with one another and sometimes lacking in inner coherence, Strato is connected with the claim that the *hegemonikon*, "guiding principle" ("ruling part"), to be taken here as meaning the rational part of the soul, was located in the head, maybe in the brain, as some sources say, maybe in the space between the eyebrows, as we are told by some other sources: cf. fr. 56–58 Sharples. Hence, he should be credited in Stoic terms with two different meanings of *hegemonikon*, since he would have so called also the soul in the unity of its rational, sensorial and emotional faculties: see n. 18 above. Yet, this would not be a real problem, according to Movia 1968, 144 n. 4; for the doxographical terminology in this case would anyway reflect, "even partially," the key-words of Strato's psychology, while reporting in other cases Strato's "genuine" vocabulary; nor should any "freedom of language" be excluded on the part of Strato. A general discussion of the historiographical debate concerning the seat of the *hegemonikon* in antiquity can be found in Mansfeld 1989.

²³ (Pseudo-) Olympiodorus, *In Platonis Phaedonem commentaria*, C II 134, p. 174, 3–11 Norvin (fr. 79 Sharples), my translation. See also Hackforth 1952, 198; Westerink 1977, 210; Sharples in this volume.

Rather than solving Strato's *aporia*, the commentator presents his readers with the implicit risks that he finds in it, and these are precisely the abolition of every distinction between the cognitive faculties of the soul, and their respective knowledge, and the reduction of the activity of thought to a function completely dependent upon sensory organs. This however does not yet prove that Strato positively adhered to such a view as a consequence of his adoption, if any, of the soul-harmonia theory. In fact the analogy established in the argument as reported could be read not as referring to the different faculties of soul (thought and sense-perception), seen respectively as a more or less attuned harmonia, but to the greater or lesser quickness of a soul to understand. Instead, in his invective the commentator does nothing more than confirm the basic assumptions of Plato's psychology in the *Phaedo*, that is the separateness and total independence of the soul from the body and of thought from sense-perception.

Aristotle too had re-examined the soul-harmonia theory with the intention of rebutting it. This circumstance can be explained by the suggestion that he too, even before Strato, must have been dissatisfied with its refutation in Plato. All the more so because, unlike Plato who considered such a theory a deceitful and cheating argument owing to its being built on what is "likely" (*Phaedo*, 92D5), Aristotle found it "persuasive," hence as much as ever needing a careful examination. This is why he did not content himself with recalling some at least of the Platonic objections but added *aporiai* of his own to these. At the same time, he dwelled upon the question *aporetically*, that is to say putting face to face in a sort of a debate the reasons that impeded the acceptance of the theory with the difficulties that resulted in rebuttal. On the one hand, Aristotle evidenced the impossibilities ensuing on the assumption that soul was a harmonia, taking the latter to mean blending and mixture of opposites in the body (its qualities or its parts). On the other hand he argued that, if the soul was no blending or mixture of bodily components and each part of the body had no soul in itself as a mixture in a balanced condition, then it remained to be explained, firstly, how soul was involved in the destruction of bodily parts and, secondly, why each part of the body was destroyed when the soul abandoned it.²⁴ Briefly, Aristotle took the soul-harmonia theory to be an unsuccessful attempt to

²⁴ The question is examined in *De anima*, I 4, 407b27–408a28. The *aporiai* here developed also occur, partially at least, in Aristotle's lost work *Eudemus*, fr. 7 Ross. On the difficulties that may result from giving up completely such a theory, *De anima*, I 4, 408a24–28; its persuasiveness on the contrary is pointed out in *ibidem* 407b27. In Plato's *Phaedo*, 92C11–E3, the negative features of the theory are deduced in contrast with the opposite ones of the recollection-theory.

prove that the soul is completely inseparable from the body; yet, he found a complete separateness of the soul to be *aporetic*, hence needing further enquiry and, in so doing, he kept his distance both from the defenders of the theory, and from its detractors, that is from Plato.

As such Strato's *aporia* could be considered as complementing Aristotle's, nor could he be said to hold the above theory any more than Aristotle can when pointing out the difficulties ensuing on its denial. In fact Strato's argument complements Aristotle's by considering the other meaning of *harmonia* that came out of Plato's dialogue, not discussed by Aristotle, i.e. that of musical attunement. Incidentally, the latter is, in Plato's words, "something invisible, incorporeal, outstandingly beautiful and divine," while the soul in this version of the theory is so related to the body as the melody to the instrument (a lyre, in the example), which on the contrary stands for the corporeal, earthy and mortal dimension.²⁵ From this point of view, therefore, even if Strato had subscribed to the interpretation of the soul as *harmonia*, he could hardly be blamed for sensationalism and materialism; hardly any materialist could interpret the soul as a sort of 'divine melody' and the body as its mortal instrument. Lucretius in fact (III 94–135) dismisses such an opinion by which the *sensus animi* was taken to be *habitus quendam vitalem corporis* (. . .), *harmoniam Graei quam dicunt* (99–100); in that case, it would belong to the body like sanity is said to belong to it, hence it could be separated from it, and certainly would not be any part of it, (101–3), whilst this evidently was *animi natura* (. . .) *atque animae: quasi pars hominis*; so the quicker "the name of *harmonia*" was given back to the "musicians" (*ad organicos*), the better (130–35). But Strato could have rendered in these 'musical' terms, completely free from any 'mystical' association, the Aristotelian explanation of the soul as the form of the body and, as such, inseparable from the actual functioning of bodily organs; in which case we should rather credit Strato with a portrait of the body as an instrument of the soul, plainly matching Aristotle's typical view on the subject. After all, this is what can be inferred from the accounts of those ancient sources that introduce Strato as establishing an analogy between the soul and the melody played by an instrument (not Plato's lyre, but seemingly an organ, if the comparison is Strato's), in which on the contrary

²⁵ Both the meanings of *harmonia* are attributed in the dialogue to Simmias: *Phaedo*, 85E5–86A3. Later on (91C8), Plato makes him attenuate the dualism of his statement by rewriting it as if the soul was "more divine and more beautiful than the body," which introduces simply differences in degree between them.

a testimony of Strato's conception of the soul as a *pneumatic* substance is usually found.²⁶

If so, the case of Strato could be analogous to that of Aristoxenus and Diceaerchus, and plausibly their version of the soul-harmonia theory could be rewritten in Aristotelian hylomorphic terms. This, however, assumes, insofar as the complicated, scanty and often contradictory evidence allows us, that (i) in Aristoxenus' and Diceaerchus' version harmonia is to be interpreted as the "harmony of the whole organism" rather than as the "harmony-of-the-four-elements"; (ii) both shared one and the same version as Strato's; (iii) all of them similarly had doctrinal interests in the theory more than examining it in that aporetic and dialectical fashion which seems to have been influential at least in the case of Strato.²⁷ What we should not forget, before turning their point against Aristotle, is the special treatment that he gives to such a theory. As we have seen, he certainly treats it aporetically and dialectically, criticizing it with an impressive barrage of arguments; yet, he (a) does not take into consideration the aspect of the musical analogy, by which in the *Phaedo* (78B4ff.) the theory echoes 'mystical' associations, i.e. an aspect to my knowledge nowhere alluded to in his pupils; (b) rejects the "naturalistic" aspect of the doctrine, by which the soul is taken to be the harmony resulting out of the mixture and the composition of bodily elements, i.e. an aspect seemingly dismissed by his pupils; (c) points out the counter-arguments that could render the theory still worthwhile and that fundamentally amount to its explanation of the relationship between soul and body, which in fact it describes as connected to each other so that none of them could last when the other perishes. He himself, then, seems to find in the soul-harmonia theory not an opposition, but a sort of confirmation by analogy of his own theory of the soul as form and function of the body. So, assuming that his pupils really had positive doctrinal interests in translating his hylomorphism into such a theory, why should they be seen as contradicting him?

²⁶ See on this Repici 1988, 26–33. The documentary evidence can be found in Tertulian, *De anima*, 14, 4 (fr. 59 Sharples) and Sextus Empiricus, *Adversus mathematicos*, VII 350 (fr. 61 Sharples), quoted above. Lucretius' example of sanity has a parallel in Aristotle's *De anima*, I 4, 408a1–2; on the topic, Repici 2008.

²⁷ In Gottschalk 1971, 181; 187–89, only Aristoxenos' and Diceaerchus' version of the theory could possibly be rewritten in Aristotelian terms. On the plausibility of rendering Diceaerchus' position in accordance with Aristotle's own hylomorphism, cp. also Sharples 2001, 145–48. In other interpretations Diceaerchus' view is rather opposed to Aristotle's and accounted for either as epiphenomenalist (Caston 2005, 177–81; 192–93) or eliminativist more than reductivist (Annas 1992, 31). In Strato's discussion Sedley 1996, 455 pre-

Finally, Strato's *aporia* relates to a specific passage of Plato's discussion. This is precisely the moment when Plato is reducing to absurdity the identification of the soul with a harmonia of the body in its musical meaning. He now argues that, if the soul is a harmonia in the latter sense, then, as there can be no harmonia=attunement that is more or less attuned than another, or fuller or lesser, or better or worse attunement than another, so there will be no soul that is more or less fully soul than another. But the paradoxical consequence of such a state of affairs would be that, analogously, no soul could be said to be better or worse than another insofar as it partakes (or does not partake) of virtue or intelligence. Indeed, since no soul can be distinguished from another for its being virtuous or vicious, just as no attunement can be distinguished from another for its being in tune or out of tune, the soul will in the end partake equally of both virtue and vice or, even more paradoxically, it will partake of virtue only, but of no vice, if vice is nothing but an attunement out of tune.²⁸ Here then Strato's *aporia* comes in: if it is true that no attunement can be distinguished from another in its being more or less attuned, it is equally true that it can be distinguished from another in regard to its tonality. Accordingly, if a soul cannot be distinguished from another in its being more fully or less fully soul, it can be distinguished from another in the tonality, so to say, of its cognitive powers, that can be sharper or flatter like the tonal differences of an attunement. In this way, the argument fulfils its *aporetical* function, weakening Plato's refutation of the theory, and by its cogency the latter is once again left with the onus of a new counter-reply. The soul in fact *could* also be a harmonia=attunement, but this would be no reason why all souls should then indifferently partake of an equal degree of cognitive powers,

fers to see a "support" lent by him to Aristoxenus and Dicaearchus in "criticising Plato's objections to the harmony theory," whilst it would be doubtful "whether or not he ever formally endorsed their view," because our evidence for his psychology "neither confirms nor altogether excludes such an attribution"; nor accordingly would any ancient account on the question tell us that Strato actually associated the soul with a material substance like *pneuma* or with anything else.

²⁸ Plato, *Phaedo*, 92E4–94B3. On his part, Aristotle distinguishes souls from one another on the basis of their respective "honor" (*timiotes*) and "lack of honor" (*atimia*); but, accordingly, in his view also the "nature" of the "body which the power of every soul participates in" (*kekoinonekenai*) must be one of the "so called elements," but "different and more divine" than the others, that is the *pneuma*: *De generatione animalium*, II 3, 736b29–31. And the reason why animals' nature can be said to be "more honourable" than plants' nature is that — he argues — animals "happen to own (*tetuchekenai*) more heat"; consequently, animals also "happen to own" a "more honourable soul" than the plants: *De respiratione*, 13, 476b14–18.

given that they could differ from one another in their different capacities of understanding like attunements in their tonality.

VI. Strato and Ideal Immortality

A larger group of *aporiai* was set up by Strato with reference to Plato's argument from ideal opposites (*Phaedo*, 100B1–107B10). For those interpreters who take Strato to uphold sensationalism and materialism, it is too easy to give these objections the value of documentary evidence of his distrust in immortality, though hidden under the unusual guise of a critical comment on Plato. Yet, these *aporiai* too can be shown to be genuine *aporiai* like the other ones, nor do they entitle us to credit Strato with any positive statement about the status of the soul. Their tenor is the following:

1. Is not every living being immortal in this way, because it does not admit death? For, there will be no dead living being and no dead soul either.
2. In this way not even the composite will ever dissolve, because it does not admit its opposite; for, it will never be dissolved as long as it remains a compound.
3. If negation can have many senses, the soul will be non-mortal not insofar as it is inextinguishable life or has inextinguishable life, but insofar as it can admit only one of the opposites and exist or not exist together with it.
4. Are not the souls of irrational animals also immortal in this way, since they confer life and do not admit the opposite of what they confer?
5. Are not the souls of plants also immortal in this way? For, they too bestow life on their bodies.
6. Is not any nature also immortal in this way? For, as it confers that which is in accordance with nature, how could it admit that which is against nature? But, as it does not admit this, it could not perish.
7. Is not any process of becoming imperishable? For, it too would be incapable of admitting the opposite, nor would there be anything that, having-come-to-be, has perished.
8. Is it not hasty to assume that, if soul does not admit death and is in that sense immortal, it is also imperishable? For, even a stone is immortal in this way, but not imperishable.

9. On what ground <can we say> that soul confers life, in order to <argue> also that it does not admit the opposite of what it confers? For, in some cases it is conferred.
10. Is it not that soul is a living thing and has a life imported from outside, so that some time or another it can lose it?
11. Is it not that soul does not admit death as the opposite of the life that is bestowed by it, but another one which is the opposite of the life that bestows life?
12. Is it not that as fire, so long as it exists, does not admit cooling, so soul too, so long as it exists, does not admit death? In fact, it confers life, so long as it exists.
13. Is it not that, even if we avoided any other thing, we could not refute the objection that the soul is limited and has limited power? For, let us take it conferring life and being separable in its essence and incapable of admitting death as the opposite of the bestowed life; yet, staying by itself, it will get weary some time or another and will perish, extinguishing itself by itself, without any impediment from outside.

I. But in this way, Strato says, not even life in a substrate admits its opposite; for, it does not persist once it admits death, just like cold does not persist once it admits heat. Therefore life in a substrate is non-mortal, just as cold is non-hot; yet, it perishes. Moreover, he says, perishing is not the admittance of death; for, no living being would perish in this way; a living being does not persist once it has admitted death, but it dies once it has lost life; for, death is loss of life. So Strato says. But it ought to be assumed that life is twofold and that the life which is being talked about is the life that bestows life, i.e. the life which is not separated because of the dying of the substrate, but because of its being separable; for, it would not be an affection of the substrate, but an essence mixed to it and bringing life into it as its affection, just as in a lighted object there is not light by itself, but its partaking in light.

II. To this Proclus adds that for the soul dying is the extinction of life and dying seems to be, as Strato himself also says, the affection by which the substrate loses life; yet, the soul is not subject to loss, but it is separated, being a separated life; therefore it does not die; therefore it is immortal. So Proclus says.²⁹

²⁹ (Pseudo-) Olympiodorus, *In Platonis Phaedonem commentaria*, C II 178–90, pp. 183, 3–184, 6; D 78, pp. 226, 22–29 and 227, 7–11 Norvin, respectively *aporiai* 1 to 13 and

To begin with (A), Strato starts from Plato's conclusion that soul can be said to be immortal because of its being deathless insofar as it will not admit death, being by itself unable to admit the opposite of what it always confers when entering a body, namely life (*Phaedo*, 105D13–E8). Hence on Plato's view soul does not look like the kind of entity *in* which opposites can come-to-be one from the destruction of the other, such as the entities referred to in the preceding argument from opposites. Soul is rather similar to the kind of entities that exist *without* admitting opposites in themselves,

aporiai I and II in my numbering. Other translations are given in Hackforth 1952, 195–97 and in Westerink 1977, 230–32. In the commentator's text the section that reports *aporiai* 1 to 13 is entitled: "*Aporiai* of Strato against the third argument." In texts I and II, whose content does not simply reproduce in a more general manner the arguments developed in *aporiai* 1 to 13 in a more detailed way, but formulates, partially at least, basic assumptions for their development, the *aporia* is reported in indirect form; in text II it is also joined with Proclus' reply to Strato. The section following to the quotation of Proclus' name (p. 227, 11–25 Norvin) is included by Sharples in his fr. 81 last part, although he cautiously comments that "it is not clear whether this objection is Strato's" (see n. 3 *ad* fr. 81, and also n. 7 *ad* fr. 80 in this volume). It seems to me that this section once again illuminates the commentator's criticism more than Strato's view. As I see it, the reasoning runs as follows. Let us suppose (against Strato) that death for the soul is not loss of life, but that, staying by itself and being separated, it is nonetheless extinguished, "if you will," also after a certain period of surviving, which is in fact the objection of Cebes in the *Phaedo*, 85D5–88D8. Yet, neither in the former case nor in the latter could one take the (supposed) extinction of the soul to be an extinction similar to the extinction of the body, which is "naturally inferior." Otherwise, firstly, the "life which is imparted" to the body would be one and the same "life which imparts it" (i.e. body and soul would be alive in the same way), and secondly both types of life would have death as one and the same opposite (i.e. body and soul would die in the same way), which is absurd. Much "better" then to argue that the soul is in no way extinguished; rather, it separates from the body at the moment of the body's death. If then this reconstruction is correct, the commentator is once again objecting to Strato's or anyone's *aporiai* insofar as they contest Plato's theory of separate soul (see also n. 12 above). *Aporiai* 1 to 13 in my numbering correspond to fr. 80 Sharples (ex-fr. 123 Wehrli) and fr. 16a Gottschalk; *aporiai* I and II respectively to fr. 81 Sharples and 16b Gottschalk. In his interpretation of the group 1 to 13, Gottschalk follows the order in which they are formulated by the commentator, only replacing the eleventh by the twelfth: Gottschalk 1965, 166–67. In turn, in his fg. 123 Wehrli (1950, 36 and cf. 75–76) arranges the *aporiai* 1 to 13 in the following order: 1, 6, 7, 2, 3, 5, 4, 8, 9, 10, 11, 12, 13. Still a different order is followed by Hackforth 1952, 195–98, who distributes these *aporiai* in the sequence 1, 4, 5, 7, 6, 2, 3, 8, 9, 10, 11, 12, 13. On his part, as far as this set of *aporiai* is concerned, Westerink prefers to maintain a "strict adherence to the pattern" presupposed by the commentator's order, for this would be "our only hope of retrieving something of Strato's plan of attack": Westerink 1977, 230–31n. The criteria of my order and distribution will become clear in the course of their exposition and interpretation. Generally speaking, I assume Plato's sequence of conceptual points developed in the dialogue as the ideal interlocutor of Strato's *aporiai*.

but *are* opposites in and by themselves, like the hot and the cold, the even and the odd, or life and death.³⁰

It is the rightness of the above conclusion that Strato aims at testing by raising his aporetic obstacles. It will be clear before long that such a conclusion is far from indisputable because of the paradoxical consequences that it leads to. Strato in fact goes on to argue that, if immortality is taken to mean deathless life, then every living being as such will be deathless, insofar as, that is to say, it does not and can not admit death (*aporia* 1). The souls of irrational beings also will be deathless, since they too confer life on the bodies which they enter and are unable to admit death (*aporia* 4), and those of plants as well, for their life too depends on the “work” of the soul (*aporia* 5). In a more general approach, it could be said that every natural entity too will be deathless, given that its coming-to-be in accordance with nature excludes its partaking of an opposite condition, hence its passing-away (*aporia* 6). The same will hold for every composite entity which will last forever and never dissolve, being unable to admit the opposite (*aporia* 2). Finally, every object that comes to be will never pass-away, if none can admit its opposite (*aporia* 7).³¹

There can be little doubt where Strato’s frame and picture come from. They clearly come from Aristotle and his world of natural substrates: ensouled plants, irrational animals, composite natures, objects which admit generation and corruption, natural and unnatural constitutions, life and death. Indeed, there is once again an explicit reference to such substrates occurring in this group of Strato’s *aporiai*. For in *aporiai* I and II above he argues, generally speaking, that in fact no substrate which admits life (or heat) can admit the opposite, namely death (or cold), if dying is

³⁰ *Phaedo*, 103A4–C4. The distinction between the two kinds of entities is introduced by Socrates to answer the critical remark of the anonymous interlocutor in the dialogue, who finds it difficult to reconcile a conception by which opposites mutually come-to-be from the destruction of one another, such as the cyclical argument had previously shown, with a conception by which they mutually exclude one another, such as the argument now in progress is intended to show. On the argument by similarity between the soul and the intelligible entities, see *ibidem* 78B4–79E7.

³¹ See on this, Aristotle, *De anima*, II 2–4. If we wanted to see in these *aporiai* the expression of positive doctrines, we should infer from them, firstly, that Strato, like Aristotle, endowed plants too with soul. Moreover, we could find a denial of Epiphanius’ account (*Adversus haereses*, III 33, fr. 47 Sharples), according to which in Strato’s view every *zoon*, to be interpreted as “animal,” would possess reason (*nous*). This piece of evidence, too, has been taken as a confirmation of Strato’s sensationalism and reductionism: cf. Wehrli 1950, 55 *ad* his fr. 48; 74–75 *ad* his fr. 117–18.

the admittance of the opposite. Its persistence as a substrate would clearly imply the exclusion of death, hence it would be deathless and in no way subject to corruption. On the contrary, any substrate *is* evidently subject to corruption and death and, when it dies, it does not admit the opposite of life; rather, it loses life and is deprived of it. The obstacle here implicitly raised to Plato's hypothesis is quite clear: if the soul were a substrate, as one could be entitled to infer from Plato's assessment of its admittance of life as an essential property, should not it perish when such a property would no more belong to it? But, before Strato, Aristotle had raised a similar point. He carefully distinguished the status of being a substrate from the status of both what is *of* a substrate and what is *in* a substrate. He then argued that, as to the soul, it is not a substrate, i.e. a body, but it is not without a body and is both *of* a body and *in* a body; yet not *of* and *in* any body whatever, as, Aristotle went on, former thinkers (Plato, presumably) seemingly assumed when simply 'attaching' it to a body, but *of* and *in* a body of specific character, namely endowed with organs.³²

On the other hand (B), Strato asked whether it was safe to infer that soul does not admit the opposite of what it confers from the fact that it confers life. It could be conferred in its turn by something else, in which case, we may infer, it would not confer life by itself on the body which it enters, but would need a support to perform its task, hence being dependent to some extent on it (*aporia* 9). Nor was it safe in his view to say that soul is "immortal" (*athanatos*) taking this to mean that, as partaking of life and incapable of admitting the opposite of what it confers, soul is "non-mortal" or incapable of partaking of "non-life." To be "non-something" can have more senses than one; so that, soul could hardly be seen as "deathless" or "undying," because its partaking of life in that case would not be such as to exclude its partaking of types of its opposite ("non-life") different from death and it could be destroyed accordingly (*aporia* 3).

It is once again apparent that it is the consistency of Plato's assumptions that is being tested, while Aristotle could here again be introduced as a referent. Firstly, Strato's argument in *aporia* 9 could have been drawn from Aristotle's theory of reproduction and the part played in it by semen, in animals and plants as well, as a vehicle of life and soul, insofar as at least nutrition and sense-perception are concerned. If this is the case, Strato would be blocking Plato's identification of soul as a species of the form of

³² Cf. Aristotle, *Categoriae*, 2; *De anima*, II 2, 414a19–28.

life, by pointing out in an Aristotelian attitude a simple circumstance: if it is by means of something else (say, the semen) that soul can enter the body and confer life on it, then soul (*a*) can no more be said to confer life having got it in and by itself, because it too would be conferred; (*b*) would lose its supposed status of intellegible entity partaking of life so as to exclude death from itself, because it too would undergo changes depending on whether it were or were not conferred by its support.³³

In turn, Strato's argument in *aporia* 3 could have been built on Aristotelian logic and the part played in it by the distinction between contrary and contradictory opposites. Particularly, in my opinion, we are reminded here of Aristotle's claim that "non-names" ("a not-man"), and for that matter "non-verbs" as well, are indefinite "names" or "verbs" and cannot be thought to be negations because a negation must always be true or false. If this is the case, Strato would be blocking Plato's view that the soul is "non-mortal" because of its incapability of admitting the opposite of what it confers, by pointing out in an Aristotelian spirit a logical inconsistency. To prove his assertion and go on to state on the basis of it that soul does not perish when the opposite is approaching, Plato should not have taken the opposites as indefinite ones, by analogy with similar pairs of opposites like the hot and the "non-hot" or the even and the "non-even." Life and "non-life" are actually opposite to one another. Yet, a "non-name" ("non-life") is not the sort of opposite of a "name" (life) which excludes any other opposite, nor are the opposites in such a case mutually incompatible with each other, being true or false respectively. Hence, as already pointed out, soul could admit any other opposite of life different from death and so cease to be properly undying.³⁴

To this lastly (C) are connected those *aporiai* of the present group which are about the indestructibility of the soul. First, Strato asked whether, generally speaking, it was safe to say that soul is indestructible ("non-destructible") because it is immortal, i.e. "non-mortal" or incapable of admitting death. On the contrary, the connection between indestructibility and immortality in this sense should not be taken for granted, seeing

³³ On Plato's deduction of soul as ideal species, see *Phaedo*, 105D3–4, where the conclusion is reached of the argument introduced at 103C10. On the relationship between soul and semen in Aristotle, *De generatione animalium*, II 1–3.

³⁴ Plato, *Phaedo*, 105E10–106A11. The problem of contrary and contradictory opposites is treated by Aristotle in *De interpretatione*, 2–8; 10.

for example that a stone, even though surely not indestructible, would be immortal, according to this reasoning (*aporia* 8). Plato in fact made his point about the indestructibility of the soul starting from its being 'non-mortal' as incapable of admitting the opposite of what it confers. Hence, soul was not subject to perishing *if and only if* it was really deathless as incapable of admitting the opposite of what it did confer. If so, it therefore could also do nothing but retreat at the approach of the opposite, granted on the other hand that it partook of those sorts of opposites, if any, which were themselves imperishable. The conclusion concerning indestructibility required, therefore, the fulfilment and the acceptance of several, not indisputable previous conditions.³⁵ It was a rather tortuous hypothetical inference, and it is this circumstance that Strato will have presumably meant to stress by introducing the paradoxical example of a trivial stone. Following Plato's premises, a stone should have been either immortal and indestructible, or immortal but destructible. The simple observation showed that both alternatives were impracticable, given that *every* stone appeared to be mortal and destructible, while *none* as destructible was immortal.

Then, as an application of the case by which a negation could be interpreted in many ways (cf. *aporia* 3, above), Strato asked whether soul could not admit other opposites than death (*aporia* 11) and tried in a questioning attitude to identify at least some of them. Namely, may it not be that soul draws life from outside, so that it can lose it sooner or later (*aporia* 10)? In such a case, the "non-life" would amount to a loss of life. Moreover, may it not be that soul admits life so long as it exists, just like fire does not admit the cold so long as it exists (*aporia* 12)? In such a case, which is a specially effective one if we think of Plato's parallels in the *Phaedo* between the condition of the soul as partaking of life and the condition of fire as partaking of heat, the "non-life" would amount to a sort of extinction of life. Finally, may it not be that soul can lose its power one day and be extinguished by itself, without any intervention from outside (*aporia* 13)? In such a case, the "non-life" would amount to a sort of decline of life.³⁶

³⁵ Plato, *Phaedo*, 106B1–C8. Here again we are reminded of the cyclical opposites in the first argument from opposites. By the introduced distinction it is also possible to distinguish the way in which the soul participates in the opposites from the way in which bodies like the fire or the snow participate in them.

³⁶ See Movia 1968, 146 n. 2, following Wehrli 1950, 75–76; on his view, particularly the *aporiai* concerning the "dissolution" of the soul (*aporiai* 10 and 12?) and its "weakening" (*aporia* 13) would be revealing. Yet, commenting on the latter *aporia*, Gottschalk 1965, 167

In the above proposed identifications, interpreters usually tend to see an expression of Strato's preferences in consequence of his supposed disbelief in immortality. Yet, given the dialectical context explicitly appealed to here by the mention of the procedure of 'rebutting' critical comments (*aporia* 13), it was once again the weakness of Plato's reasoning that these *aporiai* were seemingly intended to stress, depending as they do on the many senses of an opposite like "non-life" (cf. *aporia* 3, above); all the more so because Plato introduced his hypothetical inference on the point as a proof³⁷. Besides, here again Strato could rely on Aristotle's support. Discussing *aporetically* the question, the latter had argued that soul is not indestructible absolutely; accidentally, insofar as it is the soul of a perishable body, without which it in the whole of its functions cannot be, the soul perishes in its turn and is destroyed when the body passes-away.³⁸

ad fr. 16b, observed that, although recalling Cebes' objection in Plato, *Phaedo*, 87A, it may have been formulated by Strato with reference to Aristotle's claim that no force can give birth to a movement lasting an infinite time (*Physica*, VIII 10, 266a23). But—it should be added—this was a claim that Aristotle applied to the psychological field as well, when arguing that the cognitive functions, both thought and sense-perception, cannot be performed continually without getting tired: see *De somno et vigilia*, 1, 454a29–b9; *Metaphysica*, XII 9, 1074b29; *Ethica Nicomachea*, X 7, 1177b22. As to *aporia* 12, focused on a possible extinction of the soul, Strato could have taken a hint from Aristotle's passages, where he describes the connate heat of living beings in terms of "psychical fire" and the nutritive faculty as "inflamed" in the region of the connate heat: see *De iuventute et senectute*, 4, 469b16; *De respiratione*, 8, 474b13. Even the topic developed in *aporia* 10 (and cf. 13), which is about a possible destruction of the soul from outside and its possible self-consumption, could have been borrowed from Aristotle's remarks on death as extinction, according to or against nature, of the "psychical fire": *De respiratione*, 8, 474b13–22; *De iuventute et senectute*, 5, 469b21–470a5.

³⁷ It is held to be "proved" that the soul is immortal in the sense that it does not admit death (*Phaedo*, 105E8), whilst the argument which establishes the connection between immortality and indestructibility is judged to need no other confirming arguments.

³⁸ Aristotle, *De longitudine et brevitate vitae*, 2, particularly 465a26–32. On the topic, see Repici 2007.

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The Pseudo-Aristotelian *Mechanics* *The Attribution to Strato*

István Bodnár

Although the *Mechanics* was a seminal text in the development of early modern mechanics, by the middle of the eighteenth century it had long ceased to be part of the scientific curriculum, and became an object of study as a text in the history of science. This brought with itself a fundamental reappraisal. A text previously highly regarded for its original contribution was put down by Montucla as “entirely false” in most of its explanations, and the treatment of the first problem was labeled “completely ridiculous.”¹ This change in evaluation did not call in doubt the Aristotelian authorship of the work. Montucla² spoke about a first, very rough draft of the

¹ Montucla, vol. 1, p. 205 (part I, book III, chapter XXI): “Ils [sc. who Montucla calls ‘les Mécaniciens modernes’] trouveront sans doute que la plupart des explications qu’il donne sont entièrement fausses, et que la principale et la première est tout-à-fait ridicule.” This edition is conveniently accessible at <http://books.google.com>. I am grateful to Professor Peter McLaughlin for letting me see his manuscript “The Question of the Authenticity of the Mechanical Problems,” which drew my attention to this passage, and to lots of further details about the fortune of the *Mechanics* in the eighteenth and nineteenth centuries.

² Montucla, *ibid.*, “A la vérité, ils [sc. what Aristotle wrote on optics and mechanics] y sont encore tellement défigurés par l’erreur, q’on ne peut les regarder que comme une grossiere ébauche des ces sciences.”

discipline, and attributed this to Aristotle. But soon afterwards the Aristotelian authorship itself was also called into question, and by the mid-nineteenth century this had become the consensus view.

The rejection of the Aristotelian authorship allowed for suggestions of a different author. As the list of Strato's works, like Aristotle's, contains a title Μηχανικόν,³ Strato was an obvious candidate. And in this case, if the work was really by Strato, the presumption most probably was that the title found its way, early on, into the lists of Aristotle's writings. But the case is probably more complicated. There is one ancient text *On Machines* (or *On Siege Machines*, Περί μηχανημάτων), by Athenaeus, which in its introductory lines quickly dismisses Strato's, Hestiaeus', Archytas', and Aristotle's writings, as being too much of a show of their own erudition (ἐμφήνωσι τὴν ἑαυτῶν πολυμάθειαν, p. 4, 9–10 Wescher), and adds that “for those wanting to *do* something they would be altogether irrelevant and detached from practical enquiry.”⁴ Unless Athenaeus — probably a first century B.C.E. Peripatetic philosopher⁵ — is involved in pure name-dropping here, his stricture presupposes that he knows about, or at least he thinks he knows about, two different writings on matters mechanical, both of them reprehensible, one under Aristotle's, the other under Strato's name. These two works could have been different from our *Mechanics*. But on balance that is not the most likely supposition: that way we should postulate the existence of *two* further mechanical treatises from the early Peripatos besides the one we have. It is easier to restrict ourselves to two options. “If,” on the one hand, “Ath[enaeus] took the *Mechanica* (. . .) to be a work by Aristotle . . ., then Ath[enaeus] knew of something else in the same field by Strato, . . . If, conversely, Ath[enaeus] shared the modern view that the *Mechanica* is (in whole or part) by Strato, then Ath[enaeus] is referring to something comparable by Aristotle.”⁶ This means that Athenaeus' testimony can neither

³ Fr. 1.36. Note, however, that this reading is found only in one of the manuscripts, and there it is appended to the title of the preceding item, Περί τῶν μεταλλικῶν. Accordingly, there have been quite a few different emendations proposed, cf. also the end of note 6 below.

⁴ Tr. Whitehead and Blyth, 45, modified, emphasis in the original — τοῖς δὲ βουλομένοις ἥδη τι πράττειν μακρὰν παντελῶς ἂν εἴη καὶ ἀπηρημένα τῆς πραγματικῆς θεωρίας. (p. 5, 5–7 Wescher)

⁵ See Section B of the Introduction, about the author, in Whitehead and Blyth, 15–31, esp. 22–25.

⁶ Both options quoted from Whitehead and Blyth, 69 (Comment on p. 5, 3 Wescher). Whitehead and Blyth, moreover, go so far as to suggest a third, to my mind quite implausible, option (ibid.), that “[c]onceivably . . . this allusion is to Aristotle's investigations into general principles of movement and change in such works as the *De caelo* (. . .), the *De gen-*

prove, nor disprove a Stratonian authorship of the *Mechanics*. That suggestion needs to be discussed starting from doctrinal considerations. Indeed — no matter how the authorship of the *Mechanics* came to be disputed in the past three centuries — only doctrinal considerations can provide us with something of certainty about the issue. Accordingly, in what follows I will discuss in detail on what grounds and to what extent the considerations of the *Mechanics*, or the key analytical tools used there, can be attributed to Strato or to Aristotle. The upshot of this discussion, I admit, will be non-committal or even negative. In some cases we do not know Strato's views in enough detail to establish any relationship between him and the *Mechanics*, whereas, in a few instances we can argue with some plausibility that it is highly unlikely that he would have held the same view as the author of the *Mechanics*.

In making comparisons I will refer only to a limited range of problems in the *Mechanics*: I will be mostly concerned with the pair of problems about projectile motion (32 and 33), and then the two problems where circular motion is analysed into two linear components (1 and 8). This is so because the other problems in this collection cannot be linked or contrasted with any confidence to what we know about the doctrines of Strato.

The reason why these problems need to be discussed in detail is two-fold. First, there is a recurrent claim in the literature, that the breakdown of circular motions into constituent linear motions cannot be Aristotelian.⁷ This claim rests on the conviction that Aristotle could not subscribe to such an analysis of circular motion, because in his celestial theory the circular motion of the heavens is the manifestation of the nature of the special, celestial stuff, something Strato dispensed with. Moreover, Gottschalk in his edition of some Stratonian texts submitted that Strato subscribed to the same impetus theory for projectile motion as the *Mechanics*.⁸ If either of these

eratione et corruptione (. . .), the *Meteorologica* and the *Physics*. As to Strato, he too wrote a Περὶ (τοῦ) οὐρανοῦ (. . .) and cognate works sufficient to earn him the name φυσικός." They make this rather unlikely suggestion — according to which virtually anybody with physical doctrines could have been a butt of ridicule for a technical writer like Athenaeus — because they presuppose that if Athenaeus thought that the *Mechanics* is by Aristotle, then what he could have had in mind was "not included in the catalogue of Strato's output in Diogenes Laertius 5.59–60" (ibid.). I trust, they make this presupposition, because they accept, without further discussion of the alternatives, Cobet's and Diels' emendation in the Strato catalogue, *On Machines for Mines*, Περὶ μεταλλικῶν μηχανημάτων (fr. 1.35–36, see Whitehead and Blyth 23), and, furthermore, quite inexplicably, they suppose that Athenaeus could not have considered a work with such a title to be "in the same field" as the *Mechanics*.

⁷ See e.g. De Gandt, 126.

⁸ Gottschalk, 149–50.

claims could be definitively substantiated, we would have considerable circumstantial evidence linking Strato, or his school, to the *Mechanics*.

I

Gottschalk rests his case on a passage in the Introduction to Hero's *Pneumatics*. Diels claimed that the introduction was a fair extract of Strato's *On the Void*, and Gottschalk largely accepted that view. As it will be clear, I favour a much more piecemeal approach in this respect. As a result, I will argue that Strato's theory of projectile motion might as well have been different from Aristotle's, but this remains a guess. What we do know, however, is that neither the author of Problems 32 and 33 of the *Mechanics*,⁹ nor Hero appear to have rejected Aristotle's account of projectile motion. Strato, then, either fell in line with orthodox Aristotelian doctrine — like the *Mechanics* and Hero — or he alone among these authors subscribed to an un-Aristotelian theory of projectile motion.

First, we should recall the two passages where Aristotle treats projectile motion. These are *Physics* 8.10 266b27–267a8 and *De caelo* 3.2 301b22–30. The longer passage in the *Physics* notably submits that projectile motions are sustained by progressive pockets of the air performing the task of the mover when the thrower is no longer in contact with the thrown body. It is important to add, as the *De caelo* passage does, that air can perform this task because air is both light and heavy.¹⁰ The consideration presumably is that the thrown heavy object cannot take over the moving potential of the initiator of the motion, whereas the medium — endowed with a nature which is not absolutely heavy, and in this case it can even be characterized

⁹ The *Mechanics* being a collection of problems, we need not presume that it is the work of a single hand, unless doctrinal similarities or cross-references guarantee internal unity. These two problems, toward the end of the collection, could easily have been appended to the collection.

¹⁰ Presumably some similar consideration has to apply also to water, and further to mediums suitable for sustaining projectile motions. The similar consideration, nevertheless, cannot be exactly the same: water is not light according to Aristotle, it is only less heavy than earth. The fact that Aristotle's theory of projectile motions has to be applicable to mediums like water should mean that it should be transposable to a theory of elements like Strato's. We cannot presume (pace Krafft, 54 n.77) that by the change of the doctrine of the elements Strato also had to reject Aristotle's theory of projectile motions. Indeed, the dependency relations may very well run in the other direction: Someone, seeing that Aristotle applies the explanation of projectile motions as a transmission of the propelling force in air also to media which are not light, may draw the conclusion that attributing lightness to elements is not mandatory for purposes of this explanation.

as *both* light and heavy — can be receptive of different forms of motive activity, to the extent that it can harbor motive power even when it is no longer moved directly. This would be a significant difference from the pre-suppositions of impetus theory — where impetus can be implanted in any object, indeed, heavy objects can be more suitable recipients of the impetus — and the original Aristotelian theory, which, rather counter-intuitively, locates the motive capacity in the medium of the motion.

When we turn from Aristotle to the text of the *Mechanics*, what should be clear is that Problem 32 is not a self-standing problem. Unlike other problems of the collection, it does not answer the initial question. Instead, after articulating an array of possible answers, it says that the initial problem can only be answered if another, more fundamental issue is also taken into consideration. This means that it is quite misleading to suggest that an option in the prior problem could be taken to be the author's theory of projectile motion. At most the options canvassed might be taken as indications of alternatives. And indeed, Problem 33 is quite unequivocal: the author of the *Mechanics* subscribes to the original Aristotelian tenets about projectile motions. This means that if Hero — and behind him Strato — had indeed introduced a theory of impetus, then this would be a contrast, and not a parallel with the conservative stance of the author of the *Mechanics*. But if we take a closer look at the passage of Hero, it should be clear that far from submitting a theory of impetus, Hero here draws on the orthodox Aristotelian theory. Even though the word παρέπεμπεν (p. 14, 4 Schmidt = p. 111, 7–8 in Gottschalk's edition) is non-committal about where the propelling force resides, an earlier phrase, in lines 6–7, makes clear that Hero has something at least analogous to the Aristotelian doctrine in mind: “when the force altogether *no longer follows* the moved objects, then they return to their natural place.”¹¹ I think it does not need further argument that the expression τὸ παράπαν δὲ μηκέτι παρεπομένης αὐτοῖς τῆς ἐξαποστελλούσης βιᾶς (p. 14, 1–2 Schmidt = p. 111, 6 in Gottschalk's edition) makes sense on the assumption that the propelling force does not reside in the object moved, but rather it follows — for instance, in pockets of air, as Aristotle submits — the moved object along its path.

¹¹ It might be argued that the expression “their natural place” excludes that Hero could take his cue from Strato. This, however, is not necessarily a conclusive objection: even though the final destination on the descent will not be the natural place of the thrown body — it will not arrive at the center of the universe after the fall —, the motion it performs on the second leg of the projectile motion is the natural motion of the body, during which it approaches its natural place as much as the configuration of the elements in the cosmos permits.

As we have seen, Aristotle clearly stresses that his theory of projectile motion is intimately linked to the theory of natural places and elemental upward and downward tendency. Not only did Strato not admit that some elements can possess both a downward and an upward tendency, that they can be both light in themselves and heavy in relation to something else, he altogether rejected the notion of natural lightness, and a separate natural place for the upper elements.¹² Hero, on the other hand, says about flame that its natural region is the topmost one, above the air.¹³ It is not clear whether the explanation he gives of projectile motion is also coupled with the presupposition of the lightness of the medium, but I am inclined to think that it is. The alternative would be to attribute a patchwork to Hero, in which he, without paying attention to whether he is entitled to do so or not, introduces an account of projectile motion from Strato, and an account of elemental tendencies from some different source.

Be that as it may, it is clear that the suggestion that the text of Hero, behind that Strato, and the text of the *Mechanics* could be linked on the issue of projectile motion has to be resisted. Hero and the *Mechanics* are linked, but not for the reason that they bear the mark of Stratonian doctrine, but because they recapitulate the orthodox Aristotelian standpoint, which may, or may not have been accepted by Strato.

II

Turning to the status of circular motion, first we need to assess how and to what extent the *Mechanics* goes beyond Aristotelian doctrine. There are several passages in the *Mechanics* where circular motions are analysed into two component motions. Some of these are in Problem 1 (848b23–849a2, 849a14–17, and then the diagrammatic discussion in 849a21–b19), and the additional one in Problem 8 (852a8–14), where the author explicitly refers to the earlier break-up of circular motion in Problem 1. The two component motions are linear, but they do not remain in the same ratio to each other for any fixed time. Additionally, Problem 1 at 849a15–17 submits that one of the constituents — the tangential one (εἰς τὸ πλάγιον) — is according to nature (κατὰ φύσιν), whereas the other one — the radial one (εἰς τὸ κέντρον) — is contrary to nature (παρὰ φύσιν).¹⁴

¹² See frs. **49**, **50A** and **50B**.

¹³ See p. 14, 24–16, 2 Schmidt (p. 111, 20–112, 1 in Gottschalk's edition).

¹⁴ The exact wording of this contrast rests on Capelle's conjecture. The reading of the manuscripts — καὶ φέρεται τὴν μὲν κατὰ φύσιν κατὰ τὴν περιφέρειαν, τὴν δὲ παρὰ φύσιν εἰς τὸ πλάγιον καὶ τὸ κέντρον — would also contrast two motions, one according to nature

To some persons the very notion of analysing circular motion might seem suspect. But this suspicion would be misguided. Even though Aristotle argues in *De caelo* 1 that circular motion is simple, this does not necessarily apply to all the constrained circular motions there are. The simplicity of the natural celestial revolutions, which is at stake in *De caelo* 1, may very well allow for the presence of composite forced revolutions. The second characterization, that the component motions are in no fixed ratio to each other for any length of time, would be indeed exceptional for Aristotle to assert. Where in the *Physics* Aristotle goes through different proportionalities, he apparently does not countenance that such constantly changing ratios could characterize processes of motion — but then he does not treat circular motions there. The use, however, of the pair of expressions “according to nature” and “contrary to nature” is substantially different from what we find in other Aristotelian contexts. This remains so, even if we were to admit that the use of the expression “according to nature” is conditioned by the particular example the *Mechanics* sets out to explain in this problem, concerned with measuring the load on one arm of a balance, pressing down this arm. But then in the explanation of why it is that greater balances can provide more accurate measurements the author speaks about characteristics of circular motions, and the contrast between the two components, between the natural tangential motion and the radial motion contrary to nature is asserted about every phase of the motion on a circular trajectory, also to the ones in the case of which the use of the expression “according to nature” can no longer refer to the natural, elemental inclination of the object performing this circular motion.¹⁵

All this suggests to my mind that the *Mechanics* is not by Aristotle.¹⁶ Attempts in search of an author, then, may be worthwhile.

along the periphery, and one contrary to nature to the side and the center. There are at least two crucial problems with the manuscript reading. First, to submit that either of the linear components of a circular motion is along (or according to) the periphery is less than perspicuous. Moreover, the designations of the two components used here on the manuscript reading would not match the designations used in Problem 8, where the two component motions are labeled as ἡ εἰς τὸ πλάγιον αὐτοῦ κίνησις and as ἡ ἐπὶ τῆς διαμέτρου κίνησις, respectively.

¹⁵ Note that the fact that the naturalness of the tangential component of the circular motion does not refer to the elemental thrust of the body performing the revolution allows that the description can be transferred to cases where the body moved along a circular trajectory is light.

¹⁶ Thus, my understanding of Problem 1 is in all substantial points in agreement with Schiefsky, 82–83.

III

One should note that the designation of the two components of circular motions as according to nature and as contrary to nature will have analogous difficulties for Strato. The most succinct way to state this problem is perhaps the following: We should remember that Strato's change of the Aristotelian theory of natural motions is limited. Most notably, the two elements to which Aristotle assigned lightness, a natural tendency to rise, possess according to Strato weight, a natural tendency to reach the center of the cosmos.¹⁷ On this account all the elementary components of the world possess one and the same natural tendency, the differences among the elements — leading to the cosmic stratification of elementary masses — are differences of the intensity of their downward tendency, their weight only. But then the designation of the tangential component of circular motions as according to the nature of the moved object will, also in Strato's case, strictly speaking apply only at a single point on the periphery of the circle.¹⁸ The problems we saw for Aristotle, and for which one might have been tempted — in vain — to resort to contextual explanations, recur with the same force here. Note, however, that interestingly the same difficulty would not arise for circular motion around the center of the universe if the natural component and the component contrary to the nature of the moved object could also be assigned the other way about, i.e. if in cases of such huge revolutions the centripetal component motion could be described as performed according to the nature of the moved entity.

It is important to see that in the closing lines of Problem 8 of the *Mechanics* (852a8–14), a problem discussing why circular objects move with particular ease, the author refers back to the analysis of circular motions into two components, and labels these two components in a way which clearly connects to the previous discussion,¹⁹ but then does not characterize them in exactly the same way as Problem 1 did. Most importantly, according to this discussion of rolling, or spinning, or turning bodies of circular shape, the tangential component will be induced by the mover (τὴν μὲν

¹⁷ One could try to forge a link between Strato and the *Mechanics* also on this score, as the *Mechanics* does not refer to lightness of the moving bodies either. This, however, remains inconclusive, as the *Mechanics* does not speak about the heaviness of air or fire, either, and it is this that would be a clearly Stratonian straight.

¹⁸ To be more precise: in the case of a revolution along a circle which contains the center of the universe in its interior there would be not even one such point on the periphery.

¹⁹ Note, however, that this match rests on an emendation of lines 849a15–17 of Problem 1, as discussed in note 14 above.

γὰρ εἰς τὸ πλάγιον αὐτοῦ κίνησιν ὥθεϊ τὸ κινεῖν), whereas the motion along the diameter is performed by these objects themselves (τὴν δὲ ἐπὶ τῆς διαμέτρου αὐτὸς κινεῖται), presumably due to their round shape.²⁰ The author, I submit, uses the less committal αὐτὸς κινεῖται instead of designating this component as natural, because this is the motion of the circular object as a whole, and need not in any sense be a natural motion for the different parts constituting the round body. Nevertheless, the characterization we find in Problem 8 allows that someone like Strato, who does not introduce a special celestial element, may decompose the revolution of the fiery shell of the heavens into two component motions: one, which is somehow not the result of the fundamental elemental nature of this material, and another one, which the fiery shell performs itself.

Even though such a description of celestial revolution may not be impossible for Strato, it would certainly involve at least one serious difficulty. This is so, because it would introduce a tangential component motion, which would have to be characterized as an additional tendency, or a push, to leave the cosmos in a lateral direction (cf. frs. **26A**, **26B**). But then just as Strato did not assign an upward tendency to the lighter elemental masses, he should not have attributed to an element a tendency to leave the cosmos in a lateral direction either.²¹

IV

If the analysis of circular motions into linear components in the *Mechanics* is not likely to be transferable to Strato's account of the revolutions of the celestial bodies, there remain fundamentally two options to reckon with. Once celestial fire is held aloft due to its diminutive weight, the revolutions can be either natural — a further tendency, over and above weight, to move in circles — or this revolution can be induced by some cosmic process. The first option would, then, require the introduction of some additional natural tendency. The other option would be that Strato did not introduce such an additional natural tendency. In this case he should come up with a

²⁰ Here my analysis diverges from Schiefsky, 83–84, who takes it for granted that the claim of Problem 1 that the tangential component is the natural one can be tacitly used as a presupposition in the elucidation of Problem 8.

²¹ It is a disputed issue whether in Aristotle the upward tendency of the elements is a tendency to reach a region (towards a natural place), or a tendency in a particular direction, without a natural stopping point. Only in the latter case would Strato's rejection of the fifth element strictly necessitate that he also should reject the Aristotelian doctrine of the upward tendency of air and fire.

model which accounts for revolutions on the basis of the interaction of the cosmic components, all of them characterized by their linear tendency to reach the center of the cosmos.

We know precious little about Strato's celestial theory, and so we are in no position even to commit ourselves about this issue. What needs to be stressed, though, is that even if fire in the sky were to possess a natural tendency to perform revolutions, this should not be construed in a way that it would reintroduce something along the lines of a separate natural place for celestial fire.²² That would run counter to a fundamental innovation of Strato's, that there can be no separate outward spherical shell which would constitute the target area of the motion of fire. Similarly, it is presumably better to avoid some sort of special connection between celestial fire and the place it occupies, contrary to its tendency to proceed to the center of the cosmos. Instead, on such an account one should rather suggest that the natural tendency of celestial fire for circular motion is not tied to the place where it is performed, but rather to the diminutive weight and the presumably diminutive density of the material performing it. Should an element like that be located anywhere in the cosmos, it would also perform this additional motion.

We can contrast this option, perhaps available to Strato, to the analysis of circular motion proposed in the *Mechanics*. On this putative account, where celestial fire possesses both the natural tendency to descend *and* the natural tendency to perform revolutions, these do not manifest themselves as linear component motions. If they did, celestial fire would not need to be supported (or at least, it would not need to be supported fully) from below: the pull towards the center (at least in part) could be operative by maintaining the same distance from the center, because the operation of the other, tangential component moved the celestial material meanwhile farther away from the center. Moreover, as I have remarked above, this would require that Strato should ascribe a tendency to leave the confines of the cosmos to this celestial fire. Hence, on this putative option it is much less hazardous to suppose that the centripetal tendency of celestial fire, due to its weight, is held in check by the heavier elemental strata under it, and

²² The notion of natural place is an integral part of Strato's account of natural motion; moreover, the direction of fall cannot be fixed without reference to the center of the cosmos in a finite world. See fr. 40, where Simplicius reports that the natural motion of elements accelerates as they get closer to their proper place. I do not see any reason to doubt that this would apply also to the downward thrust of air or fire, when they are not pushed out by the overbearing weight of other elements.

the kind of additional natural motion this celestial fire needs to be invested with is some natural revolution.

All in all, on this first option Strato, albeit with very important restrictions, would have followed Aristotle's explanatory strategy for celestial motions, in the sense that in the case of celestial entities the revolutions they perform are the result of a further not analyzable natural capacity for these revolutions.²³

One final caveat, however, is in order about such an almost re-Aristotelianized Strato: in the context of such an account it will no longer be strictly true that every element can be characterized by an elemental tendency towards the center of the universe. No matter how much the outermost spherical shell presses down on the shell just below it, once an additional natural tendency is allowed — no matter whether this additional tendency is a tendency for tangential motion along a straight line, or for circular motion around the center — the celestial fire will have a tendency to perform the complex motion composed of these two putative natural components, and this, I submit, would be in conflict with Simplicius' testimony in fr. 49. So it is best to abandon this rather hazardous option altogether.

The alternative, as I have indicated above, is that celestial revolutions can be dependent on the interplay of the different cosmic masses. For such an account an obvious Aristotelian parallel suggests itself: *Physics* 7.2 244a2–4, where Aristotle submits that vortex motion is tied to pushing and pulling: pushing some bodies away from the center, and pulling some other bodies to the center.²⁴ One should note that even though this passage of the *Physics* describes vortex motion as intimately linked to these two motions, it does not invite the analysis of circular motions into two components. This is eminently so, because the two different motions are performed by different entities: a vortex pushes the lighter bodies to the periphery, whereas it draws in the heavier bodies to the center. The motion

²³ Note that the parallelism of the two explanatory strategies need not extend to Aristotle's further claim that the celestial element is eternal and possesses a natural tendency to always move in circles. Strato, contrary to Aristotle, rejected the exemption of celestial fire from the sublunary domain of contraries. Hence, even if he subscribed to the thesis that celestial revolution is the (additional) natural motion of the fire in the sky, he did not need to attribute a tendency to perform eternal revolutions. To this extent, he could resort to a move similar to what he did in his criticism of Plato's argument for the immortality of the soul, where he rejects that possessing a capacity which gives rise to an attribute could guarantee that the entity thus characterized cannot possibly lose this attribute, see esp. fr. 80.

²⁴ ἡ δὲ δίνησις σύγκειται ἐξ ἑλξεώς τε καὶ ὤσεως· ἀνάγκη γὰρ τὸ δινούν τὸ μὲν ἔλκειν τὸ δ' ὠθεῖν· τὸ μὲν γὰρ ἀφ' αὐτοῦ τὸ δὲ πρὸς αὐτὸ ἄγει.

of the vortex on this model is the outcome of different bodies performing different motions, and it is the particular pattern of interaction of these motions which constitutes swirling.

This means that if Strato took his cue for an explanation of celestial revolutions from Aristotle's suggestion about vortex motion, there does not need to be any connection whatsoever between Strato's theory of celestial motions and the analytical tools employed in the pseudo-Aristotelian *Mechanics*. Granted, there could be any number of connections we do not have access to. Indeed, Strato in his *Mechanics*, if he had one, might as well have used the same analytical methods that we find deployed in the pseudo-Aristotelian *Mechanics*. It is nevertheless important to stress that even though we cannot exclude this, there is not a shred of evidence to substantiate that anything comparable to what we find in the *Mechanics* was undertaken by Strato. All we can assert with confidence is that the author (or the authors) of the *Mechanics* and Strato doubtless contributed to the same intellectual enterprise of Peripatetic research.*

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Nachleben

Anonymous

Old Strato was no fool; he even chaired a School.
His writings were acute, not easy to refute.
But others won the day and sent him far away
To places quite remote, where now he is a boat.

Scholion on Diogenes Laertius 5.60

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